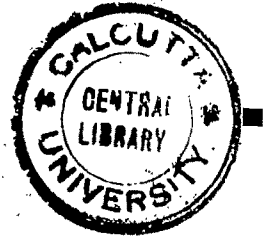


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Book List)



A MONTHLY LIST OF RECOMMENDED
SCIENTIFIC AND TECHNICAL BOOKS

with annotations

VOLUME 32 NUMBER 1

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XII

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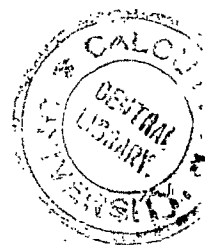
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A & U	Allen & Unwin
C & H	Chapman & Hall
CUP	Cambridge University Press
EUP	English Universities Press
HMSO	Her Majesty's Stationery Office
MITP	Massachusetts Institute of Technology
O & B	Oliver & Boyd
OUP	Oxford University Press

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007 Information. Communication. Control Theory

CHERRY, C.

1

On human communication: a review, a survey, and a criticism. 2nd ed. Cambridge (Mass.), London, MITP, ©1966. xiv, 337p, diags, refs, appendix, index, bibliog. \$10.00.

B This established classic in the field of communication theory has been revised to the extent of updating some figures, extending the bibliography and adding a few comments. Every library covering linguistics, psychology, semantics or cybernetics should have this book.

3 SOCIAL SCIENCES

31 Statistics

HARRIS, B.

2

Theory of probability. Reading (Mass.), London, [etc], Addison-Wesley, ©1966. ix, 294p, tables, diags, refs, appendixes, index. 53s. *Addison-Wesley series in statistics*.

C Other recent books seem to do what the author is attempting, but this is largely the result of his having adopted a broad title for his work. This book is typical of the work coming from the Mathematical Research Center at Wisconsin—firmly based on the best teachings in the theory it propounds with a distinct forward look towards the use of that theory in practical situations. The result is an axiomatic approach coupled with the use of characteristic functions and the (cumulative) distribution function rather than the probability density. There are many illustrations and exercises. References and tables are given together with a list of supplementary reading for continuing development in interesting fields of work. The mathematical prerequisites for the book are remarkably slight and it clearly deserves the most serious consideration by anyone who needs to acquire a logical, consistent and useful understanding of modern probability theory.

LEE, A. M.

3

Applied queueing theory. London, Melbourne, Toronto, Macmillan; NY, St Martin's P, 1966. xi, 244p, tables, diags, appendixes, index. 2 gns. *Studies in management*.

B There are five chapters which set out the relevant considerations from basic theory. Two bridging chapters, on the nature of operational solutions and types of approximation, lead to the second half of the book which is on applications. A final summing-up is followed by an appendix on sources and references together with many other interesting notes and comments. Lists of symbols, charts and essential formulae are given together with an index. Although the applications are almost wholly concerned with air transport, the author's approach is such as to merit the highest commendation for his book as the best approach to problems of congestion which if not understood will inevitably result in intolerable queues. The book is written in a characteristically warm, human and eminently readable style.

5 MATHEMATICS AND NATURAL SCIENCES

51 Mathematics

AHLFORS, L. V.

4

Lectures on quasiconformal mappings. London, NY, [etc], Van Nostrand, ©1966. 146p, diags. 22s. *Van Nostrand mathematical studies*. Paperback.

C No conformal mapping of a square on a rectangle will map vertices on vertices. In 1928 Grötzsch asked how nearly the result could be approached and suggested a measure of approximate conformality; later work has been inspired by Ahlfors and Teichmüller. A sound knowledge of conformal mapping and a little set-theory will allow the postgraduate reader to tackle this clear and succinct monograph on a developing topic.

ARSAC, J.

5

Fourier transforms and the theory of distributions. Tr. by A. Nussbaum and G. C. Heim. Englewood Cliffs (NJ), Prentice-Hall, ©1966. xv, 318p, tables, diags, index, bibliog. 4 gns. *Prentice-Hall applied mathematics series*. [First pub. Paris 1961.]

C An interesting account of the Fourier transform steering an intermediate course between

extreme rigour and intuitive ideas. Divided into four parts, the author starts with a mathematical survey and then gives examples of the use of transforms in diffraction theory and partial differential equations. A final section deals with numerical methods.

- MACDONALD, P. 6
Mathematics and statistics for scientists and engineers. London, NY, [etc], Van Nostrand, ©1966. xii,299p, tables, diagrs, refs, appendix, index, bibliog. 65s cloth; 32s 6d paper.

B This book is designed as a comprehensive two-year course for chemists, metallurgists and chemical engineers. There are many statistics, as the author believes that no scientist should be ignorant of statistical techniques. He is particularly well qualified to write this book, as he holds degrees in both chemistry and mathematics and an M.Sc. in mathematical statistics.

- SNEDDON, I. N. 7
Mixed boundary value problems in potential theory. Amsterdam, North-Holland; NY, Wiley, 1966. viii,283p, tables, diagrs, refs, appendix, indexes. 80s.

C Potential functions in a domain when the function is prescribed on part of the boundary and its normal derivative on the other part have been much studied in the last twenty years, particularly by the author and his collaborators. Dual integral equations, dual series and integral representations are developed to obtain explicit solutions in simple cases and numerical processes for more complex cases. Methods are approached through specific physical problems. Analytical techniques are skilfully handled without too much insistence on matters of interest only to pure mathematicians.

53 Physics

- CORBETT, J. W. 8
Electron radiation damage in semiconductors and metals. NY, London, Academic P, 1966. x,410p, tables, diagrs, refs, appendix, indexes. 132s. *Solid state physics, advances in research and applications*.

C A particularly clear and well annotated survey containing over a thousand references, mainly concerned with the interpretation of experimental studies of the increasingly complex defects induced by fast electrons in a wide range of carbon. The investigation and identification of defect types by EPR and annealing studies is critically examined and defect mobility discussed. An excellent reference work for research workers.

- ter HAAR, D. and WERGELAND, H. 9
Elements of thermodynamics. Reading (Mass.), London, Addison-Wesley, ©1966. xiii,160p, tables, diagrs, appendixes, index. 53s. *Addison-Wesley series in advanced physics*.

B A useful text for undergraduate classwork covering briefly but clearly the elementary mathematical formulations of physical and chemical thermodynamics, and assuming acquaintance with heat phenomena and calculus. The first, second and third laws, equilibrium, thermodynamic potentials, systems of variable mass and the effect of external fields are discussed in some detail and are usefully supported by worked problems in each chapter.

- SHOCKLEY, W. and GONG, W. A. 10
Mechanics. Columbus (Ohio), Merrill Books [distrib. by Prentice-Hall], ©1966. x,213p, tables, diagrs, index. 32s cloth; 14s paper. *Merrill physical science series*.

B This book gives a completely novel approach to the teaching of classical mechanics. Familiar events are used to introduce concepts (invariance or conservation principles) and illustrate thinking processes and laws used in a theoretical science. It should provoke and stimulate both student and teacher.

- SKIPP, B. O. ed. 11
Vibration in civil engineering: proceedings of a symposium organized by the British National Section of the International Association for Earthquake Engineering, held at Imperial College of Science and Technology, London, April 1965. Butterworths, 1966. iv,302p, plates, tables, diagrs, refs, index. 85s.

C This book constitutes an important reference for specialists. It contains twenty-six papers dealing mainly with man-made vibrations. Seven long review papers cover general aspects of structural vibration, transmission of vibrations, instrumentation, soil dynamics, dynamic behaviour of foundations, current practice in structural design and case histories in structural isolation. Other papers complement these subjects.

- SOKOLOV, A. A., LOSKUTOV, Y. M. and TERNOV, I. M. 12
Quantum mechanics. Tr. by Scripta Technica. NY, London, [etc], Holt, Rinehart & Winston, ©1966. xix, 537p, tables, diagrs, appendixes. 88s.
B A good undergraduate text giving the usual introduction to the background and techniques of the subject, from a physical rather than a mathematical point of view. The inclusion of chapters on conductivity, the rotator, spectra of alkali metals, theory of simple molecules and elastic scattering serve as good illustrations of the basic principles.

539.1 Nuclear Physics

- FRAZER, W. R. 13
Elementary particles. Englewood Cliffs (NJ), Prentice-Hall, ©1966. ix, 190p, tables, diagrs, refs, appendixes, index. 56s.
B The aim of this text is to provide graduate students with enough background in elementary particle physics to enable them to understand and appreciate recent developments. The subject is developed without the use of field theory, thus making it more accessible to the experimentally oriented reader. Every significant branch of the field is covered including a chapter on the eightfold way.
- HARRISON, A. W. 14
Intermediate atomic and nuclear physics. London, Melbourne, Toronto, Macmillan; NY, St Martin's P, 1966. viii, 279p, plates, tables, diagrs, index. 36s.
B A useful text intended for first and second year students in universities and colleges. It contains a broad, self-contained presentation of the subject, making it suitable also for those taking physics only as a subsidiary subject. The last three chapters are devoted to laboratory work suitable for degree courses.

54 Chemistry

- AMERICAN CHEMICAL SOCIETY 15
Ion-molecule reactions in the gas phase: a symposium sponsored by the Division of Physical Chemistry at the 152nd meeting of the Society, New York, September 1966. Washington (DC), the Society, 1966. viii, 336p, tables, diagrs, refs, index. \$8.50. *Advances in chemistry series*, 58.
C Eighteen papers covering recent developments in the field, mostly based on mass spectrometry and radiation chemistry, and including studies of flames. Much of the work centres on the effect of the kinetic energy of the reacting ion on the reaction cross section. This is a welcome and timely contribution to the literature of this comparatively new subject.
- CORWIN, A. H. and BURSEY, M. M. 16
Elements of organic chemistry, as revealed by the scientific method. Reading (Mass.), London, [etc], Addison-Wesley, ©1966. xviii, 746p, plates, tables, diagrs, indexes. 56s. *Addison-Wesley series in chemistry*.
B This is a text for first and second year degree students in chemistry. It is clearly written and reflects most of the numerous features of the subject in a manner designed to stimulate the interest and understanding of the reader. The basic reactions, the geometry and structures of organic compounds, the use of physical and especially of spectroscopic methods are described. Considerable space is given to natural products. Theories on reactivities and reaction mechanisms are presented and numerous questions are provided. Molecular models are widely used. This is a well balanced account of the subject.
- EVANS, E. A. 17
Tritium and its compounds. Butterworths, 1966. xiii, 441p, plates, tables, diagrs, refs, appendix, indexes, bibliog. 100s.
C An excellent critical, comprehensive treatise and primary source on tritium properties, production, uses, handling, labelling, analysis and isotope effects of particular value to those engaged in, or about to undertake, work involving tritium tracers. The author's extensive experience in the field greatly enhances the value of this book.
- LIBERLES, A. 18
Introduction to molecular-orbital theory. NY, London, [etc], Holt, Rinehart & Winston, ©1966. ix, 193p, tables, diagrs, indexes. 48s.
B The teaching of this subject to degree students in chemistry is limited by their mathematical training, so that the more elementary accounts often reduce the mathematical presentation excessively. In this book, the subject is developed slowly, starting with the properties of

electrons and the Schrödinger equation and proceeding through the Hückel molecular-orbital theory and the determination of the coefficients in the Schrödinger equation to heterocyclic molecules and aromatic molecules. This book should be a help to those teaching the subject.

LLOYD, D.

19

Carbocyclic non-benzenoid aromatic compounds. Amsterdam, London, NY, Elsevier, 1966. x, 220p, tables, diagrs, refs, index. 70s.

B-C This text can be recommended to those requiring a fairly detailed introduction to a subject which has made recent rapid progress. It is concisely and clearly written and contains numerous references. Cyclopropane, cyclobutane and cyclopentadiene derivatives, and aromaticity are treated successively, followed by tropylium salts, tropones, tropolones, large ring compounds and finally some polycyclic compounds. The treatment is such as to maintain the interest throughout.

PEREL'MAN, F. M.

20

Phase diagrams of multicomponent systems: geometric methods. Tr. from Russian by D. A. Paterson. NY, Consultants Bureau, 1966. ix, 82p, tables, diagrs, refs. \$12.50. Paperback.

C This monograph is an account of geometrical projection methods in the representation of multicomponent systems and of the use of these methods in predicting the behaviour of such complex systems. It is presented at a relatively high level, but should be of considerable interest to geologists and industrial research workers studying systems of up to seven components.

57 Anthropological and Biological Sciences

BAKER, J. R.

21

Cytological technique: the principles underlying routine methods. 5th ed. Methuen, 1966. xi, 149p, tables, diagrs, refs, index. 12s 6d paper; 25s hard. *Science paperbacks*.

B A well written and concise account of the chemical and physical principles involved in the fixation, embedding, staining and mounting of plant and animal tissues.

BAKER, W. K.

22

Genetic analysis. Nelson, [1966]. xii, 164p, plates, tables, diagrs, refs, appendix, index. 15s. *Riverside studies in biology*. Paperback.

B A stimulating introduction to modern genetics with the accent on methods of analysis rather than on broad principles and lists of facts. The ten chapters and two appendixes are mainly devoted to cellular and molecular genetics with reference to virus, bacteria and higher forms excluding man.

BURNS, M. and FRASER, M. N.

23

Genetics of the dog: the basis of successful breeding. 2nd ed. Edinburgh, London, O & B for the Commonwealth Agricultural Bureaux, 1966. viii, 230p, plates, tables, diagrs, refs, appendixes, indexes. 45s.

C A comprehensive account dealing with inherited physiological anomalies and diseases, eye defects, and skeletal disorders with a detailed and informative account of the genetics of coat colour and heredity and environmental aspects of behaviour. These, together with the introductory chapter on Mendelian genetics and on show points and conformation, should prove invaluable to the dog breeder.

FINTER, N. B. ed.

24

Interferons. Amsterdam, North-Holland, 1966. xviii, 340p, tables, diagrs, refs, indexes. 90s. *North-Holland research monographs, frontiers of biology, vol. 2*.

C This meticulously edited and superbly produced volume covers every aspect of interferons with extraordinary clarity in nine articles by eminent authorities. Workers in virology, protein chemistry, biochemistry and medical research have long needed such a book.

LOVELESS, A.

25

Genetic and allied effects of alkylating agents. Butterworths, 1966. xiv, 270p, plates, tables, diagrs, refs, appendixes, index, bibliog. 77s 6d.

C A stimulating and much needed treatise on the molecular action of alkylating agents in inducing chromosome aberrations and mutations and in inactivating bacteria, viruses and transforming principles. Mutagen specificity and possible molecular mechanisms of muta-

tion and structural change are discussed with particular reference to *Drosophila*, higher plants, fungi, bacteria and viruses.

- LUSH, I. E. 26
Biochemical genetics of vertebrates except man. Amsterdam, North-Holland, 1966. viii, 118p, tables, diagrs, refs, index. 36s. *North-Holland research monographs, frontiers of biology, vol. 3.*

C A review of the genetic variants in various mammals, birds and fishes that can be defined in biochemical terms. Erythrocyte characters, proteins of plasma, milk and egg-albumen and various enzymic variants are considered, but biochemical polymorphisms in blood groups and histocompatibility antigens are excluded.

- MEDVEDEV, Zh. A. 27
Protein biosynthesis and problems of heredity, development and ageing. Tr. by A. Syngé. Edinburgh, London, O & B, 1966. xxi, 584p, plates, tables, diagrs, refs, index. 110s. [First pub. Moscow 1963.]

C A comprehensive and well written volume divided into four parts. These are the structure and specificity of nucleic acids and proteins, molecular mechanisms for their reproduction, special features of protein synthesis in different systems, and the biosynthesis of these molecules in relation to heredity and development. Of particular value is the account of Russian work in this field and the useful summaries at the end of each section.

58 Botany

- DUDDINGTON, C. L. 28
Seaweeds and other algae. Faber, 1966. 207p, plates, diagrs, index. 36s.

A The author acknowledges that this volume is a compilation derived largely from a survey of the standard works on the freshwater and marine algae. The result is a rather disjunctive and elementary treatment, but one giving useful information on the structure, life-histories, physiology and uses of the group.

- WILSON, M. and HENDERSON, D. M. 29
British rust fungi. CUP, 1966. xviii, 384p, diagrs, index, bibliog. 90s.

C-D Provides keys, descriptions and good illustrations for the identification of genera and species. Simplifies reference to members of large groups (for example *Puccinia*) by clear headings to host families and genera. Modernizes the previous standard work of the same title by W. B. Grove in 1913.

59 Zoology

- BUSVINE, J. R. 30
Insects and hygiene: the biology and control of insect pests of medical and domestic importance. 2nd ed. Methuen, 1966. xi, 467p, illus, tables, refs, appendix, index. 100s.

A-B A valuable guide for those concerned with the practical aspects of the subject, representing a substantial revision of the 1951 edition. The first seven chapters deal with general aspects of insects and insecticides, and the other nine chapters with specific types of infestation. An appendix comprises keys to species mentioned in the text.

- NOVÁK, V. J. A. 31
Insect hormones. Methuen, 1966. xvii, 478p, plates, tables, diagrs, refs, indexes. 90s. [First pub. in German language 1959.]

C A comprehensive, detailed analysis of endocrine-mediated processes in insects, with chapters on the interactions, mode of action and chemistry of the hormones. Includes a useful chapter on techniques. Theoretical considerations on the control of metamorphosis, including diapause, are exhaustive. This edition is modernized by notes, some perhaps too cursory, on work published between 1963 and 1965. There are nearly 2,500 invaluable references. The author's 'gradient factor' hypothesis is given a very full treatment.

- POLIKARPOV, G. G. 32
Radioecology of aquatic organisms: the accumulation and biological effect of radioactive substances. Tr. from the Russian by Scripta Technica, tr. edited by V. Schultz and A. W. Klement, Jr. Amsterdam, North-Holland; NY, Reinhold, 1966. xxviii, 314p, plates, tables, diagrs, refs, appendixes. 108s.

B-C-D A compendious work containing an enormous amount of data set out with admirable

clarity and translated in a most felicitous fashion. Two major sections cover the accumulation by marine organisms of radioactive substances from each group of the periodic system, and the effect of nuclear radiation on such organisms. The general introduction and conclusions are well balanced and the sensible judgements are most readably expressed.

6 APPLIED SCIENCES

62 Engineering and Technology

RICHARDUS, P.

33

Project surveying: general adjustment and optimization techniques with applications to engineering surveying. Asst author J. S. Allman. Amsterdam, North-Holland, 1966. xii, 467p, plates, tables, diagrs, index, bibliog. 115s.

C This is a very comprehensive book, written by and for engineering surveyors. More than half the text is devoted to the theory and practice of basic procedures and it considers at some length the accuracy available from them. The remainder of the text develops more sophisticated techniques, supported by actual projects from the authors' field experience. An excellent review of modern practice for the geodetic engineer and an advanced textbook for the senior student.

621 Mechanical and Electrical Engineering

INTERNATIONAL ATOMIC ENERGY AGENCY

34

Pressure vessel codes: their application to nuclear reactor systems: findings from a survey by the International Atomic Energy Agency. Vienna, the Agency [distrib. by HMSO], 1966. 32p, tables, diagrs, refs. 6s. *Technical reports series*. Paperback.

C The report, based on replies to a questionnaire, outlines the differences in scope and legal standing between National Pressure Vessel Codes, and pinpoints some of the difficulties in applying the codes to nuclear reactor pressure vessels. The report will be of interest to designers of reactors for export.

TIMMERHAUS, K. D. ed.

35

Advances in cryogenic engineering, vol. 11. Proceedings of the 1965 Cryogenic Engineering Conference, Rice University, Texas, August 1965. NY, Plenum P, 1966. xvi, 712p, plates, tables, diagrs, refs, indexes. \$19.50. *Cryogenic engineering conference publication*. [Vol. 8 revd September 1963 no. 521.]

C A wide range of topics is covered by the seventy-six papers in this volume, but there is some emphasis on the application of cryogenics to space technology, for example, insulating materials, self-sealing systems, storage of propellants, etc. Other papers are devoted to aspects of refrigeration, superconductivity, phase equilibria, mechanical properties of materials at low temperatures and heat transfer. The work will be useful to all engineers and research workers concerned with low temperature phenomena.

621.3 Electrical Engineering

MANDL, M.

36

Directory of electronic circuits: with a glossary of terms. Englewood Cliffs (NJ), Prentice-Hall, ©1966. xi, 226p, diagrs, appendix, index. 60s.

D A comprehensive collection of over fifteen hundred circuits. Each circuit is illustrated and analysed, with circuit values shown in most cases. There is a good balance between valves and solid state devices, and a glossary of terms is included. This book should prove useful to technicians and engineers in electronics, but research workers in other fields using electronic techniques will also find it of value.

621.7 Workshop Practice

FLINTHAM, E.

37

Manual, semi-automatic and automatic arc welding. British Oxygen Co., ©1966. xi, 403p, plates, tables, diagrs, index. 45s.

B The electric arc has proved to be a most effective welding heat source, but its success is strongly related to the skill of the operator. This manual, with a strong practical bias, is written primarily for the operator and is amply illustrated. However, the thirty-three years welding experience of the author and the abundance of practical data make this a useful reference book. There are four sections—metal arc, tungsten arc, semi-automatic and automatic welding. A valuable practical book.

621.8 Power Transmission

CAMERON, A. 38

Principles of lubrication. Longmans, 1966. xiii, 591p, plates, tables, diagrs, indexes. 150s.

B A comprehensive, theoretical treatment of the principles of lubrication, with the mathematics kept at an elementary level. Types of lubrication are described and also the effects of temperature and pressure. The three main classes of bearings are discussed, also elasto-hydrodynamics, oil whirl and alternating loads. The last eight chapters are contributed by specialists. A useful textbook with a comprehensive list of references for each chapter.

63 Agriculture. Forestry. Livestock. Fisheries

DAVIES, W. and SKIDMORE, C. L. eds 39

Tropical pastures. Faber, 1966. 215p, plates, tables, diagrs, refs, appendixes, index. 50s.

B Series of articles by leading specialists, including Dr J. Griffiths Davies, Professor Martin Jones and Dr E. W. Russell, on aspects of pasture management, improvement and utilization in the 'biological tropics' between 30°N and S, edited by the former Director of the Grassland Research Institute, Hurley, and the Director of the Commonwealth Bureau of Pastures and Field Crops, who stress the need for further research so that tropical grazings, approaching ten thousand million acres, can make an effective contribution to increasing world food supplies.

66 Chemical Technology**669 Metallurgy**

INSTITUTION OF METALLURGISTS 40

Composite materials: lectures delivered at the Institution of Metallurgists refresher course, November 1965. Iliffe for the Institution, 1966. 9, 154p, plates, tables, diagrs, refs, index. 37s 6d.

C This book deals with the fundamentals of composite materials, including both particle dispersion and fibre reinforcement, with particular reference to mechanical properties. Kelly deals with the theoretical strength of typical metals, Smith with dispersed phase alloys, Forsyth with both theory and application of fibre reinforcement and Kennedy with the potential applications of composites. An up-to-date review of the subject to be welcomed by research workers in this new and promising field of materials science.

41

STEEL DESIGNERS' MANUAL: prepared for the British Steel Producers's Conference in conjunction with the British Iron and Steel Federation. 3rd ed. Crosby Lockwood, 1966. xiii, 1086p, tables, diagrs, refs, index, bibliog. 75s.

C Since its first publication in 1955, this work, the only one of its kind in the UK, has been a valuable reference book for the steelwork designer. Those responsible have continually kept the information up to date with the various British Standards and codes of practice. In this edition, the contents have been rationalized, for example, all the items on 'Connections' have now been collated in one chapter. Several new chapters have been included, notably those on 'Cantilever and suspended span', 'Use of computers', 'Surface preparation', 'Composite construction', and 'Space frames'. Many other chapters have been revised and extended considerably.

67/68 Manufactures

WALKER, J. S. and MARTIN, E. R. 42

Injection moulding of plastics. Iliffe for the Plastics Institute, 1966. 8, 227p, plates, tables, diagrs, index. 47s 6d.

B This is the latest addition to the engineering series of the Plastics Institute monographs, and it is written mainly for students of plastics technology. It is a companion volume to *Plastics moulding plant no. 2* on injection moulding equipment. Written by people who have long practiced the art, the book has a practical bias. The sections on 'Characteristics of moulding materials' and 'Applied techniques' (the latter includes discussion of injection mould design and moulding practice), contain the distilled experience of many years.

681 Precision Mechanisms

COMPOSITION INFORMATION SERVICES 43

Glossary of automated typesetting & related computer terms. 2nd ed. Los

Angeles (Calif.), CIS, 1956. 105p. \$15.00 (25 per cent discount to educational institutions). Paperback.

D This publication is more than just a glossary. It should be very useful as a quick reference book for anybody interested in computer-aided typesetting who wants to know what the printer's terms mean, what the computer terms mean, what the computer-typesetting terms mean, who is doing what in this field or what equipment is available or planned of use in automated or semi-automated typesetting. A few obscurities introduced by typographical errors detract little from the general usefulness of this book.

HAMPSHIRE TECHNICAL RESEARCH INDUSTRIAL COMMERCIAL SERVICE (Hatricks) 44
Bibliography of critical path methods. Southampton, Hatricks, 1966. 72p, appendix. 1 *gm*. Paperback.

D An extremely useful gathering of references (books, journal articles and reports) on the theory and applications of network analysis methods. The major sections are on Critical Path Analysis and PERT, with smaller sections on other techniques such as RAMPS, SCANS, etc. The majority of references come from the period 1960-4, with a small number from 1965 and 1966.

PARKHILL, D. F. 45
Challenge of the computer utility. Reading (Mass.), London, [etc], Addison-Wesley, ©1966. xi, 207p, plates, tables, diagrs, refs, index. 45s.

A-B This wide ranging book attempts to link the history and technology of the computer utility to its effect on economic, political and social evolution. There are many useful accounts in the text of operating systems such as project MAC, Rand Johnniac and soc, and the earlier computer utilities are summarized in tabular form.

SCHAEFLER, G. F. 46
Course in ALGOL programming: including the revised report on the algorithmic language ALGOL 60. London, Macmillan; NY, St Martin's P, ©1966. xi, 201p, tables, diagrs, refs, appendix. 40s.

A-B A clearly and attractively presented basic course. No prior knowledge of programming or computers is assumed, and a basic competence in ALGOL is built up with the aid of well-chosen exercises. The exposition is machine-independent as far as possible, but for the sake of practical implementation the input/output and control functions of Elliott 803 ALGOL are dealt with. The revised report on the Algorithmic Language ALGOL 60 is given in full in the appendix.

69 Building Industry

KINNIBURGH, W. 47
Dictionary of building materials. C R Books, 1966. 285p, tables, refs, bibliog. 60s.

D The almost limitless scope of a dictionary, especially a specialist one like this, presents the compiler with an unenviable task of selection. To hope to cover materials, trade names and processes to meet the needs of architects, engineers and others, with about sixteen hundred entries is being optimistic. Nevertheless this dictionary does begin to fill a current gap, and students of building and architecture will gain much from it.

7 THE ARTS

77 Photography

MASON, L. F. A. 48
Photographic processing chemistry. London, NY, Focal P, ©1966. 321p, plates, tables, diagrs, refs, appendixes, indexes. 70s. *Focal library*.

C A useful and reliable book for anyone concerned with the processing of photographic materials, black and white or colour. A fairly good knowledge of chemistry, particularly organic and physical, is assumed. The author is a leading worker in the field.

Publishers

THE FOLLOWING ABBREVIATIONS ARE USED IN ASLIB BOOK LIST

A & U	Allen & Unwin
B & S	Bailey Bros & Swinfen
C & H	Chapman & Hall
CUP	Cambridge University Press
EUP	English Universities Press
HMSO	Her Majesty's Stationery Office
O & B	Oliver & Boyd
OUP	Oxford University Press
R & KP	Routledge & Kegan Paul
T & H	Thames & Hudson
ULP	University of London Press

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0 SCIENCE AND KNOWLEDGE

007 Information. Communication. Control Theory

TINKER, M. A.

49

Bases for effective reading. Minneapolis, U of Minnesota P; London, OUP, 1966. vi, 322p, plate, tables, diags, index, bibliog. 60s.

B-C The book presents a valuable compilation and discussion of data and findings from many studies of the basic psychological and physiological aspects of reading, including perception, comprehension, eye-movement, typography and legibility (the longest section), visual factors and illumination, and the testing of reading. The bibliography runs to 356 items.

159.9 Psychology

MEADE, J. E. and PARKES, A. S. eds

50

Genetic and environmental factors in human ability: a symposium held by the Eugenics Society in September-October 1965. Edinburgh, London, O & B, 1966. xi, 242p, tables, diags, refs, indexes. 57s 6d.

C The eminence of the contributors to this volume is a guarantee of its value. All are at the top of their respective professions: psychology, sociology, biochemistry, obstetrics and genetics. Some articles clarify aspects of the heredity/environment problem and help to elucidate the concept of 'intelligence'; there are several contributions on problems of selection to higher education and particularly useful ones on mental defect—including the relationship of social class to mild and severe subnormality.

5 MATHEMATICS AND NATURAL SCIENCES

HARTLEY, Sir Harold

51

Humphry Davy. Nelson, ©1966. viii, 160p, plates, diag, index, bibliog. 35s. *British men of science.*

A-B With less emphasis on the personal life than on his scientific work a critical analysis is given of Humphry Davy's chemical researches. The evolution of his chemical thought and the transformation of chemistry produced by Davy's somewhat erratic genius are well brought out. This addition to a useful series is a welcome contribution to the history of chemistry.

51 Mathematics

FRAENKEL, A. A.

52

Set theory and logic. Reading (Mass.), London, [etc], Addison-Wesley, ©1966. vii, 102p, diags, indexes, bibliog. 2 gns. *Addison-Wesley series in logic.*

B This is a translation of the monograph *Mengenlehre und Logik* published in 1959. It is a treatment of logical problems which have arisen in the development of set theory. The topics covered are equivalence and cardinal numbers, infinite sets and transfinite cardinals, the axiom of choice, paradoxes of set theory, ordinals and problems of well-ordering. The book will be of most use for those looking for an introduction to the logical problems arising out of set theory, particularly that of infinity; it is not an exposition of set theory.

HORVÁTH, J.

53

Topological vector spaces and distributions, vol. i. Reading (Mass.), London, [etc], Addison-Wesley, ©1966. xii, 449p, tables, diags, indexes, bibliog. 96s. *Addison-Wesley series in mathematics.*

C A comparatively elementary introduction to topological vector spaces and the Schwarz theory of distributions, that is, to a branch of functional analysis of interest to pure and, to some extent, applied mathematicians. This theory is also relevant to the study of partial differential equations. The book is reasonably self-contained with clear exposition, detailed proofs and useful exercises.

KEMENY, J. G., SNELL, J. L. and KNAPP, A. W.

54

Denumerable Markov chains. NY, London, [etc], Van Nostrand, ©1966. xi, 439p, tables, diags, refs, indexes. 100s. *University series in higher mathematics.*

C This systematic account contains much material from recent research papers. Infinite matrices provide one main tool and are described with elementary measure theory, and the

fundamental results are developed. Applications are made to discrete potential theory and boundary theory for both transient and recurrent cases, for which a little knowledge of topology is required. A valuable book for the honours degree student contemplating research in this field.

LANG, S.

55

Introduction to diophantine approximations. Reading (Mass.), London, Addison-Wesley, ©1966. viii, 83p, tables, index, bibliog. 51s. *Addison-Wesley series in mathematics*.

C Rational approximations to irrational numbers, largely using continued fractions, are studied in a crisp, concise fashion. Various asymptotic formulae are obtained, and quadratic irrationals and the exponential function receive special detailed treatment. Little previous knowledge is assumed, and the book should suit an honours undergraduate. The author hopes that research will be stimulated to produce a broad general theory.

LANG, S.

56

Introduction to transcendental numbers. Reading (Mass.), London, Addison-Wesley, ©1966. vi, 105p, appendix, bibliog. 57s. *Addison-Wesley series in mathematics*.

C The transcendental nature of e and π was proved about a hundred years ago, but general results are much more recent; one of the first was the $\alpha\beta$ theorem of Gelfond and Schneider in about 1929. Lang's concise exposition of present day theory is a postgraduate tract for the young research worker. In addition to giving the main known results, it has most valuable informal comment on motivation, choice of method, unsolved problems and desirable lines of development.

SARIO, L. and NOSHIRO, K.

57

Value distribution theory. NY, London, [etc], Van Nostrand, ©1966. xi, 236p, indexes, bibliog. 60s. *University series in higher mathematics*.

C Picard's theorem, Collingwood's 'defect' theorem, and Nevanlinna's classic work on meromorphic functions have led to generalized problems on mappings between Riemann surfaces, work much inspired by Ahlfors. Precise results about closed surfaces and partial results about open surfaces give the postgraduate reader a clear view of what has been accomplished in recent years and where research is needed.

53 Physics

58

HANDBOOK of chemistry and physics: a ready-reference book of chemical and physical data. Ed.-in-chief R. C. Weast, ed.-in-charge of mathematics S. M. Selby. 47th ed. Cleveland (Ohio), Chemical Rubber Co. [distrib. by Blackwell Scientific Publications], ©1966. xxviii, [1856p] Various paging, tables, diagrs, index. 8 gns.

D The forty-seventh edition of the 'Rubber Bible' has been improved by the addition of twenty new tables, including recent data on elementary particles, properties of magnetic materials and a most useful table of dimensionless groups. Many other tables have been revised and augmented and a number of the mathematical tables reset for greater clarity. Few information departments can afford to be without this famous compilation.

HWA, R. C. and TEPLITZ, V. L.

59

Homology and Feynman integrals. NY, Amsterdam, Benjamin, 1966. xi, 331p, diagrs, refs, index, bibliog. \$13.75. *Mathematical physics monograph series*.

C There are 114 pages of introduction by two physicists to the subject of analytic functions defined by contour integrals and their study by homology theory. The remainder of the book is devoted to reprints of classic papers by physicists concerned with the study of Feynman integrals occurring in quantum field theory. This book is the only introduction to this difficult subject readable for a physicist.

KAYE, G. W. C. and LABY, T. H. comp.

60

Tables of physical and chemical constants, and some mathematical functions. 13th ed. Longmans, 1966. 249p, tables, index. 35s.

D It is seven years since the last edition of 'Kaye and Laby', and the Editorial Board have taken the opportunity to revise and bring up to date many of the tables as well as adding some fresh ones. Much of the introductory material in each section (general physics, chemistry and atomic physics) has also been revised. By rigorous selectivity, very specialized data have been omitted and the overall length of the work is much as it has been in recent editions. The work is an indispensable reference tool in all scientific libraries.

LEONTOVICH, M. A. *ed.*

61

- Reviews of plasma physics, vol. 2. Tr. from Russian by H. Lashinsky. NY, Consultants Bureau, 1966. viii, 297p, diags, refs, appendixes. \$12.50. [Vol. 4 revd September 1966 no. 416.]

C This volume contains four articles. The first by Morozov and Solov'ev on magnetic field configurations, treats the complicated toroidal, helical and cusp field distributions for plasma containment. The second article is by Shafranov on plasma equilibrium in a magnetic field and the third article is by Kadomtsev on hydromagnetic stability: these two articles are connected and discuss equilibrium and stability. The fourth article, by Morozov and Solov'ev, on motion of charged particles in fields gives particle orbits in fields including oscillatory fields. All the articles are mathematical but with a reasonable amount of discussion and explanation.

SIROTA, N. N., GORSKII, F. K. and VARIKASH, V. M. *eds*

62

Solid state transformations. Tr. from Russian by G. D. Archard. NY, Consultants Bureau, 1966. xi, 169p, plates, tables, diags, refs. \$22.50. Paperback.

C This book contains a few papers on the theory of critical phenomena and phase transformations of the second kind, and a number of papers on experimental aspects of phase transformations.

SKOBEL'TSYN, D. V. *ed.*

63

Physical optics: proceedings (Trudy) of the PN Lebedev Physics Institute, vol. 30. NY, Consultants Bureau, 1966. ix, 270p, tables, diags, refs. \$27.50. *Lebedev Physics Institute series*. Paperback.

C The title of this volume is rather misleading as the book covers a variety of topics in theoretical physics. The four main papers cover Raman and electronic absorption spectra, the arc discharge in inert gases, hypersonic vibrations in liquids, and covariant theory of relativistic wave equations for particles with an arbitrary spin. There are also two short papers dealing with gas-dynamical and thermodynamic parameters behind shock waves and the application of the quasi-classical approximation to inelastic collisions.

TISZA, L.

64

Generalized thermodynamics. Cambridge (Mass.), London, MITP, ©1966. xii, 384p, tables, diags, refs, index. 75s.

C Over half the book consists of reprints of papers by the author and co-workers published from 1949 to 1963. The three main subjects are macroscopic thermodynamics of equilibrium, statistical thermodynamics of equilibrium (including a consideration of fluctuations) and the logical and conceptual structure of physics. The book would be of greatest value to specialists in these fields.

WU, T-Y

65

Kinetic equations of gases and plasmas. Reading (Mass.), London, Addison-Wesley, ©1966. vi, 298p, tables, diags, refs, indexes. 94s. *Addison-Wesley series in advanced physics*.

C The first half of this book gives a lucid introduction, at postgraduate level, to the theory of irreversible processes in gases, discussing the Boltzmann equation and the approach to equilibrium by a neutral gas. The second half gives the various methods of constructing a kinetic equation for ionized gases with and without an external static field.

ZHBANKOV, R. G.

66

Infrared spectra of cellulose and its derivatives. Ed. by B. I. Stepanov, tr. from the Russian by A. B. Densham. NY, Consultants Bureau, 1966. xiv, 333p, tables, diags, refs, appendixes. \$16.00.

D This book contains a description of the techniques for obtaining IR spectra of cellulose and its derivatives, a discussion of the spectra in terms of structure, 210 spectra curves covering the regions 3600-2600 and 1800-400 cm., and a table of characteristic group frequencies. The reproduction of the spectra is rather poor. It will provide an important source of information for those concerned with analysis of cellulose and its derivatives.

539.1 Nuclear Physics

CHEW, G. F.

67

Analytic S-matrix: a basis for nuclear democracy. NY, Amsterdam, Benjamin, 1966. ix, 103p, diags, refs, index. \$8.25.

- C Professor Chew's brief account of recent developments in strong interaction studies of hadrons will interest theoretical physicists familiar with the subject. The significance of analyticity is discussed and the general principles of the S-matrix developed to include unitarity, first and second degree analyticity and bootstrap dynamics. Throughout, the author keeps a critical eye on the relationships between theory and experiment as well as the limitations and potentialities of the method.

EDEN, R. J. *and others*

68

Analytic S-matrix. By R. J. Eden, P. V. Landshoff, D. I. Olive and J. C. Polkinghorne. CUP, 1966. viii, 287p, diags, refs, index. 75s.

- C A valuable introduction in some detail to the S-matrix approach to the strong interaction physics of particles of zero spin and isospin. A general development of S-matrix theory is preceded by chapters on the analytic properties of Feynman integrals, asymptotic behaviour and the graphical representation of the analytical properties of perturbation theory. Of interest mainly to the theoretical physicists in the field.

SKOBELETSYN, D. V. *ed.*

69

Studies of nuclear reactions; tr. from Russian by S. Chomet. NY, Consultants Bureau, 1966. vii, 222p, tables, diags, refs. \$22.50. *Proceedings (Trudy) of the PN Lebedev Physics Institute, vol. 33*. Paperback.

- C Reports on recent Russian experimental and theoretical work in reactions involving nucleons or deuterons with one of the following: $H, D, T, He^4, C^{12}, Mg^{24}, Al^{27}, Si^{28}$ and Fe^{56} . Total and differential cross sections, phase shifts for elastic and inelastic scattering and energies of excited states are given. Relative kinetic energies range from a few thousand KEV up to 15 MEV. Various improved reaction theories based on second quantization, Green's functions, Van Hove's time correlation functions, and a method for increasing reaction yields are discussed. The presentation is sufficiently detailed even for the non-specialist.

TOMLIN, D. H.

70

Fundamental atomic physics. London, Glasgow, Blackie, 1966. ix, 658p, plates, tables, diags, index. 85s cloth; 45s paperback. *Student's physics*.

- B A modern account of many aspects of the nature and behaviour of atoms and molecules, reaching a level of sophistication in keeping with current syllabuses in physics for undergraduates and supported by an adequate treatment of the classical background. The first part surveys experiments revealing the properties and electron structures of atoms, ions and molecules by analysis of spectra, X-ray scattering and mass spectrometry. The second part lays a foundation of classical and statistical mechanics, electromagnetic theory and relativity. The third part gives useful introductions to wave mechanics and quantum statistics with applications to bound states, spin and magnetic moments, perturbation theory, diatomic molecules, transition probabilities and a discussion of the consequences of indistinguishability.

54 Chemistry

AMERICAN CHEMICAL SOCIETY

71

Lignin structure and reactions. A symposium sponsored by the Division of Cellulose, Wood, and Fiber Chemistry at the 150th meeting of the Society, Atlantic City, September 13-14 1965. Washington (DC), the Society, 1966. xiii, 267p, frontispiece, tables, diags, refs, index. \$8.00. *Advances in chemistry series, 59*.

- C This well produced volume contains the eighteen papers presented at the second symposium on lignin structure. The papers are a valuable, critical survey of the present knowledge, recent views and new ideas concerning lignin chemistry, with special reference to investigations made during the preceding decade.

ATKINS, P. W. *and* SYMONS, M. C. R.

72

Structure of inorganic radicals: an application of electron spin resonance to the study of molecular structure. Amsterdam, London, NY, Elsevier, 1967. x, 280p, tables, diags, refs, indexes. 120s.

- C An excellent study of the formation and trapping of radicals, trapped and solvated electrons, and of radicals containing up to five atoms, with a down-to-earth description of ESR. The more rigorous mathematical basis is well treated in extensive appendixes. This will be welcomed by advanced undergraduate and postgraduate students and research workers interested in radical, ESR and structural studies.

DEFAY, R., PRIGOGINE, I. and BELLEMANS, A. 73

• Surface tension and adsorption. Tr. by D. H. Everett. Longmans, 1966. xxxii, 432p, tables, diagrs, indexes, bibliog. 100s.

C This book is devoted to a thermodynamic study of surface tension and adsorption, and the main emphasis is on the properties of liquid surfaces although the surface tension of solids is dealt with in more detail. However, little attention is directed towards adsorption by solids. The treatment combines generality of approach with a detailed description of the more important applications of thermodynamics to particular systems. The book is an excellent translation from the French.

INTERNATIONAL ATOMIC ENERGY AGENCY

74

Chemistry of transplutonium elements. Vienna, IAEA [obtainable from HMSO], 1966. 238p, tables, indexes, bibliog. 30s. *Bibliographical series no. 19.*

D This bibliography contains 1,034 references, arranged alphabetically by author, with titles and abstracts in English. It attempts to list all publications on the chemistry of transplutonium elements appearing between 1951 and 1964, and all publications on the physics of these elements from 1958 to 1964. There is an author index and a subject index arranged by elements.

MCLAFFERTY, F. W.

75

Interpretation of mass spectra: an introduction. NY, Amsterdam, Benjamin, 1966. xvii, 229p, tables, diagrs, refs, appendix, index. \$9.00. *Organic chemistry monograph series.*

B Recommended to students and, particularly, to organic chemists who require a practical introduction to the use of mass spectrometry in the identification of the structure of organic compounds. The interpretation of spectra is explained with the aid of well chosen examples. The different types of ionic and non-ionic species are discussed and the role of some rearrangements in producing breakdown ions is explained. Examples and references are given.

MIKEŠ, O. ed.

76

Laboratory handbook of chromatographic methods. Tr. edited by R. A. Chalmers. London, NY, [etc], Van Nostrand, 1966. 434p, plates, tables, diagrs, refs, appendix, index. 75s. *Van Nostrand series in analytical chemistry.* [First pub. Prague 1961.]

C The original Czech edition has been brought up to date to provide practical details and sufficient theory to enable them to be intelligently applied. Thin-layer and ion-exchange chromatography, gel-filtration and electrophoresis are included, as well as paper and column methods. The book is particularly useful for the worker who needs to construct his own apparatus and ancillary devices, and it has an extensive bibliography.

MORRISON, R. T. and BOYD, R. N.

77

Organic chemistry. 2nd ed. Boston, Allyn & Bacon, 1966. ix, 1204p, tables, diagrs, index, bibliog. 69s.

B Modern theories and the results of using modern physical and especially spectroscopic techniques are introduced from the start in this text for first and second year degree students, at the expense of a more detailed description of factual organic chemistry. The emphasis is so far on the side of theory that an account dealing with the other parts of the subject would be needed by the student. A very large number of questions are a feature. With these reservations, the book is the product of much thought.

PRYOR, W. A.

78

Introduction to free radical chemistry. Englewood Cliffs (NJ), Prentice-Hall, ©1966. xvii, 110p, tables, diagrs, index. 44s cloth; 20s paper. *Prentice-Hall foundations of modern organic chemistry series.*

B The book covers the free radical chemistry requirements of most undergraduate courses in chemistry. It does so in a concise and readable fashion, and accomplishes exactly what is indicated in the title. One major criticism is that it does not devote sufficient space to considerations of how modern spectroscopic techniques are of use in free-radical studies, and a chapter devoted to this aspect would have been invaluable.

SAUNDERS, L.

79

Principles of physical chemistry for biology and pharmacy. London, NY, Toronto, OUP, 1966. ix, 438p, tables, diagrs, appendixes, index, bibliog. 3 gns.

B Designed as a course for students taking a degree in pharmacy or in a biological subject. The

treatment gives a good picture of the main ideas and concepts of the subject and the book is recommended to those who require a wide coverage but no detailed understanding. Little mathematical knowledge is assumed; equations are used in support of the lucid verbal presentation of the subject, but are not developed.

van SOMEREN, E. H. S., LACHMAN, F. and BIRKS, F. T. 80

Spectrochemical abstracts, vol. XI 1964-65. Hilger & Watts, ©1966. 94p, indexes, bibliog. 3 gns. Paperback.

D This volume contains 469 short abstracts of the literature of chemical spectroscopy in 1964-65. The arrangement is similar to that in previous volumes in the series, but some modification of headings has been introduced by adopting some features of the system of classification proposed for this field by Dr H. Kaiser.

SZYMANSKI, H. A. 81

Interpreted infrared spectra, vol. 2. NY, Plenum P, 1966. ix, 304p, tables, diags, index. \$12.50.

C-D The spectra of thirteen alkynes and 247 aliphatic and alicyclic hydroxy-compounds mainly mono- and dihydric alcohols are reproduced with probable assignments of the most important absorption bands. A short discussion of structure-spectra correlations in these classes of compounds is also given. The book is likely to be of interest mainly to specialists in qualitative organic analysis by IR spectroscopy who do not have access to other spectroscopic techniques for structure determination.

548 Crystallography

LIPSON, H. and COCHRAN, W. 82

Determination of crystal structures. 3rd ed. Bell, 1966. viii, 414p, plates, tables, diags, refs, indexes. 90s. *Crystalline state, vol. III* [Vol. IV revd December 1965 no. 617.]

B-C An extensive revision of this well-known book retains the clarity of presentation which is characteristic of the earlier editions. There are new chapters on anomalous scattering, thermal effects and neutron and electron diffraction. The treatments have been revised of intensity statistics (Dr A. Hargreaves) and direct methods (Professor M. M. Woolfson). This is a well-balanced introduction to current procedures.

57 Anthropological and Biological Sciences

HARDIN, G. 83

Biology: its principles and implications. Drawings by E. L. Gillespie, portraits by H. Warshaw. 2nd ed. San Francisco, London, Freeman, ©1966. viii, 771p, illus, plates, tables, diags, appendixes, index, bibliog. 54s. *Series of books in biology*.

A-B The first edition of this book was in 1961. This edition has been revised in the light of advances in molecular biology and the potential upsetting of the balance of nature by man. Particular note is made in the preface of Watson and Crick's famous paper and of Carson's *Silent spring*. The first part is based on the new thinking on molecular biology and the second part deals with equilibria, ecology and evolution. This theme is carried into the rest of the book which deals with plants, animals and heredity. There are many illustrations.

JENNINGS, B. H. and MURPHY, J. E. eds 84

Interactions of man and his environment: proceedings of the Northwestern University Conference held January 28-29 1965. NY, Plenum P, 1966. xii, 168p, plates, tables, diags, refs, index. \$9.50.

B This symposium was jointly sponsored by the Northwestern University and the Borg-Warner Corporation. After an opening address by the Surgeon General of the United States on environmental health, there are papers on looking at man in his various environments, a section on atmospheric ecology and two sections devoted to the environmental spectrum of today and tomorrow. The approach of the symposium was to the health of man in his modern urban setting.

577.1 Biochemistry

KIHLMAN, B. A. 85

Actions of chemicals on dividing cells. Englewood Cliffs (NJ), Prentice-Hall, ©1966. xi, 260p, plates, tables, diags, refs, indexes. 60s. *Prentice-Hall biological science series*.

B-C The first part is a lucid but condensed description of the cell, the nucleus, DNA syn-

thesis, chromosome duplication and the normal course of mitosis. In the second part the inhibition of mitosis and the production of chromosomal aberrations by chemicals are discussed. For such a rapidly developing field the book is remarkably up to date. Emphasis is given to the mechanisms of action of the chemicals and to biochemical explanations of their cytological effects.

6 APPLIED SCIENCES

62 Engineering and Technology

BONIS, L. J., de BRUYN, P. L. and DUGA, J. J. *eds* 86

Fundamental phenomena in the materials sciences; vol. 3, surface phenomena. Proceedings of the Third Symposium on Fundamental Phenomena in the Materials Sciences, held January 1965 at Boston. NY, Plenum P, 1966. ix, 230p, plates, tables, diagrs, refs, index. \$12.50. [Vol. 2 revd August 1966 no. 382.]

C Valuable accounts by specialists of very recent experimental and theoretical progress on surface phenomena. The subjects covered are thermodynamics, fluid surface tension, nucleation in vapours and in deposits on substrates, epitaxy, polymer condensation, surface self-diffusion at high temperatures or on nearly pure metals, mechanical behaviour of metals, and ultrafine particles in a gas phase.

621.4 Internal combustion and other special engines

CHLUMSKÝ, V. 87

Reciprocating and rotary compressors. Prague, SNTL; London, Spon, [1966]. 533p, plates, tables, diagrs, index, bibliog. 4 gns.

B-C A comprehensive text covering all types of compressors except axial and centrifugal. Theory includes the thermodynamic processes in the reciprocating compressor, as well as the kinetics of the piston and connecting rod, and methods of stressing the frame. Practical details and drawings of typical compressors and components are given. There is also much peripheral information, flow measurement, psychrometric data, design of receivers and coolers. The book has been well translated and the background of Czech practice is a further feature of interest.

624 Structural Engineering

ROOS, D. 88

ICES system design. Cambridge (Mass.), MITP, ©1966. [348p] Various paging, diagrs, refs, appendixes. \$5.00.

C ICES (Integrated Civil Engineering System) is a computer system designed for solving a wide range of civil engineering problems. Text exhaustively covers ICES design philosophy and its implementation primarily from the system analyst's viewpoint and not the practising engineer's. This is a forward-looking theme although somewhat obscured by jargon.

629.19 Astronautics

MILLER, J. E. *ed.* 89

Space navigation, guidance and control. Maidenhead, Technivision Ltd for the Advisory Group for Aerospace Research and Development of the North Atlantic Treaty Organization, ©1966. x, 373p, plates, tables, diagrs, refs, index. \$15.50. *AGARDograph 105*.

B This volume presents a picture of the basic requirements, design, philosophy and equipment for the guidance and control of the Apollo moon-landing vehicle. Earlier papers state the problems and discuss the solutions, later papers present detailed information on the design and construction of items required to satisfy the solutions. The information provides a valuable guide to the methods used for interplanetary journeys, rendezvous and soft landings. The authors are part of the senior design staff of the Instrument Laboratory of MIT. The book is printed in uninterrupted pages of text which facilitates rapid reading and the illustrations are grouped so that there is no necessity to turn the book round to consult them.

63 Agriculture. Forestry. Livestock. Fisheries

PHILLIPS, J. 90

Development of agriculture and forestry in the tropics: patterns, problems, and promise. 2nd ed. Faber, 1966. 221p, tables, appendixes, index, bibliog. 50s.

B The aspects of crop production, conservation, pastoral and livestock industry and forestry are dealt with. The principles of both financial and technical aid are based on experience gained in South America, Asia and Africa, and on observations made during numerous

world bank missions. Intended chiefly for the agriculturist, the forester and conservationist will find some chapters of interest.

66 Chemical Technology

AMERICAN CHEMICAL SOCIETY

91

Flavor chemistry: a symposium sponsored by the Division of Agricultural and Food Chemistry at the 149th meeting of the American Chemical Society, Detroit, April 6-7 1965. Washington (DC), the Society, 1966. ix, 278p, plates, tables, diags, refs, index. \$8.00. *Advances in chemistry series*, 56.

C An excellent survey of the present situation in the field of flavour chemistry. The fifteen papers cover theories of taste and odour and give the latest advances in studies on the flavours of specific commodities such as meat, dairy products, fruit and vegetables.

BENNION, E. B., STEWART, J. and BAMFORD, G. S. T.

92

Cake making. 4th ed. Leonard Hill, 1966. xv, 347p, plates, tables, index. 3 gns.

A-B This book gives well-documented, practical and theoretical guidance on the properties and uses of the basic ingredients and prepared fillings, toppings, etc. used in cakes and pastries, and to their preparation and baking. The legal aspects, hygiene, bakehouse machinery and nutritional values are also considered.

EARLE, R. L.

93

Unit operations in food processing. London, NY, [etc], Pergamon P, 1966. xi, 342p, tables, diags, refs, appendixes, index, bibliog. 35s. *Commonwealth and international library of science, technology, engineering and liberal studies*. Paperback.

B The space devoted to each topic in this book on food process engineering is limited, but the matter is well set out and the style lucid and direct. Worked examples are included, and each chapter or sub-chapter ends with a summary. The book is concerned with principles, and there is thus no reference to items of plant available on the market.

666 Glass and ceramic industries

PORAI-KOSHITS, E. A. ed.

94

Structure of glass; vol. 7, methods of studying the structure of glass. Proceedings of the Fourth All-Union Conference on the Glassy State, Leningrad, part II. Tr. from Russian by E. B. Uvarov. NY, Consultants Bureau, 1966. ix, 245p, plates, tables, diags, refs. \$25.00. [Vol. 6 revd December 1966 no. 593.]

C The various methods of studying the structure of glass are broadly grouped into optical, electrical and crystallization methods. Infrared and ultraviolet spectroscopy, microwave spectroscopy, nuclear magnetic and electron paramagnetic resonance, electrical conductivity, injection currents, photoconductivity, electron microscopy and etching by ion-bombardment are representative examples of the methods described in full. Brief discussions are included.

67/68 Manufactures

95

COURTAULDS vocabulary of textile terms. Courtaulds [distrib. by Technical Industrial Services Ltd, 11 Albert Sq. Manchester 2], ©1964. [206p], tables. 1 gn.

D A small but useful vocabulary of words and expressions used in connexion with fibres (particularly man-made), yarns and fabrics, their properties and processing. The terms are listed in English with French, Spanish, German and Russian equivalents and with alphabetical indexes for each language. A final section gives conversion factors and tables (British and metric units, count systems) in the five languages. Excellently printed and bound.

MAYOFIS, I. M.

96

Plastics insulating materials. London, Iliffe; Princeton (NJ), Van Nostrand, 1966. 7, 320p, tables, diags, refs, index. 55s.

B This is a translation of a Russian book. The title is somewhat misleading as the book is concerned with electrical insulating materials and dielectrics is the peg on which is hung a discussion of polymer science. It is thus a textbook dealing generally with the preparation, structure and properties of a wide range of polymers and specifically with various aspects of the relationship between polymers and their electrical behaviour. As such it can be thoroughly recommended.

MILLER, M. L.

97

Structure of polymers. NY, Reinhold, ©1966. xv, 704p, plates, tables, diagrs, refs, indexes. \$27.00. *Polymer science and engineering series*.

B-C This book is for chemists who are not specialists. It presents under the headings molecular weight, molecular weight distribution, branched molecules, molecular interactions, hydrodynamic volume of polymer molecules, stiffness of molecules, network polymers, molecular isomerism, copolymers, crystallinity, orientation, polyelectrolytes, electrical properties, a wide range of information supported by numerous references. While these should provide the more detailed information which will be required, it is unfortunate that very few recent references are included and that the treatment of the more recent developments is sketchy.

681 Precision Mechanisms

HARVILL, J. B.

98

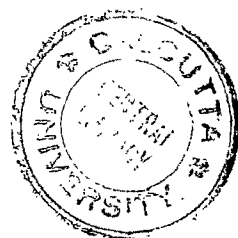
Basic FORTRAN programming. Englewood Cliffs (NJ), Prentice-Hall, ©1966. 263p, tables, diagrs, appendixes, index. 40s. Paperback.

B This primer, based on the well tried 'descriptive text followed by exercises' approach, is in general clear and easy to follow, and it has a good index. Unfortunately, the section on flowcharting is marred by not following orthodox practice. The result is that the flowcharts are cramped, travel in all directions and in some cases are inadequately arrowed.

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Preface

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- b* where they are unable to examine copies of new books before ordering;
- c* when more extensive reference tools are not available to them.

Entries are normally restricted to books in the English language and are arranged by the Universal Decimal Classification. The symbols *A*, *B*, *C* and *D* are used to denote the standards or categories of books, as follows:

- A* books suitable for general readers; treating their subjects in an introductory, elementary or general manner
- B* books of intermediate technical standard or students' textbooks
- C* books of an advanced or highly technical character
- D* directories, dictionaries, handbooks, lists and catalogues, encyclopedias, yearbooks and similar publications.

Regular transactions of societies are not included, nor are British Standard Specifications (except bound volumes).

The place of publication is London unless otherwise stated.

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Aslib Book List

VOLUME 32 . NUMBER 3 . MARCH 1967

0 SCIENCE AND KNOWLEDGE

002 Documentation

BOTTLE, R. T. and WYATT, H. V. eds

99

Use of biological literature. Butterworths, 1966. ix, 286p, tables, diags, refs, appendixes, index. 58s.

B-D This bibliographical guide with its sixteen authors covers biology in its widest sense including biomedicine, applied biology (agriculture etc.), history as well as government publications, patents and trade literature. A useful feature has been introduced—a suggested set of exercises for practical work for students. It is likely to become an essential reference tool for biologists and in library schools, as it fills a long-standing gap in the documentation of the biological sciences.

06 Institutions

100

WORLD OF LEARNING 1966–67. 17th ed. Europa Publications, 1967. xiv, 1578p, index. 150s.

D This new edition is a useful and reliable reference book. The systematic classification for learned societies and research institutes has been extended to several more countries and additional information has been included in many of the university entries. There is a new group called Technological Universities. The information on the USSR has been considerably expanded.

3 SOCIAL SCIENCES

31 Statistics

KENDALL, M. G. and STUART, A.

101

Advanced theory of statistics; vol. 3, design and analysis, and time-series. Griffin, 1966. ix, 552p, tables, diags, refs, index. 136s.

C This third volume adds a final set of sixteen chapters to a work consisting of fifty chapters, one thousand exercises and appendixes involving a total of over 1,660 pages. Monumental in size, organization and technical competence, it is drafted in a style which is nowhere forbidding and frequently forthright in comment. The international reputation of the authors commands serious attention. The chapters fall into four groups: analysis of variance, design of experiments and surveys (where the statistician has an essential part which is wider than mere self-defence concerning subsequent analysis of the data), multivariate methods of analysis, and the difficult topic of time series analysis. Multivariate methods come nearest to the reality of many situations and electronic computers now make their use a practical possibility. The treatment of time series is unequalled anywhere in the relevant literature and alone would make this book well worth possessing.

5 MATHEMATICS AND NATURAL SCIENCES

AMERICAN CHEMICAL SOCIETY

102

Kekulé centennial: a symposium co-sponsored by the Division of History of Chemistry, the Division of Organic Chemistry, and the Division of Chemical Education at the 150th Meeting of the Society, Atlantic City, September 15–16 1965. Washington (DC), the Society, 1966. vii, 198p, plates, tables, diags, refs, index. \$6.50. *Advances in chemistry series*, 61.

B 1965 marked the centenary of the publication of Kekulé's theory of chemical structure, which formed a turning point in the history of organic chemistry. This symposium contains papers on the ideas of Kekulé and his contemporaries, and also on the subsequent development of structural organic chemistry and modern problems presented by some recently synthesized compounds. The book should give chemists a deeper insight into the concepts and problems of chemical structure.

51 Mathematics

COHEN, P. J.

103

Set theory and the continuum hypothesis. NY, Amsterdam, Benjamin, 1966. 154p, diags, refs. \$6.00.

B-C This book consists of a set of lecture notes whose main objective is to prove the independence of the continuum hypothesis. It is intended for mathematicians who are not

specialists in logic and set-theory and a general introduction to logic and set-theory is provided, as well as a proof of the consistency of the continuum hypothesis and the axiom of choice.

EFIMOV, N. V.

104

Elementary course in analytical geometry; part I, analytical geometry in the plane; part II, three-dimensional analytical geometry. Tr. by E. R. Dawson, tr. edited by F. J. Rayner, additional material by D. J. Maxwell. London, NY, [etc], Pergamon P, 1966. xii,213p; xii,184p, tables, diagrs, appendix. 1 gn; 17s 6d. *Commonwealth and international library of science, technology, engineering and liberal studies*. Paperbacks.

B Attention is paid in the first volume to the structure of co-ordinate systems and to methods, from algebra and calculus, rather than to results; properties of conics are restricted to the fundamentals. Part of the text in the second volume is devoted to vector algebra which is used, rather half-heartedly, in discussing the reduction of the general equation of the second degree and the simplest quadric properties. An appendix deals with determinants. For exercises, the reader is referred to the companion volume by Kletenik.

GOODMAN, R. and SEGAL, I. eds

105

Mathematical theory of elementary particles: proceedings of the conference held at Endicott House, Dedham, Mass., September 12-15 1965. Cambridge (Mass.), London, MITP, ©1966. vii,188p, diagrs, refs. \$6.00.

C Twelve articles on specialized topics in the theory of quantized fields which should be of interest to research workers in theoretical physics and functional analysis. It is a stimulating book although no attempt is made to cover the subject.

HAFSTROM, J. E.

106

Introduction to analysis and abstract algebra. Philadelphia, London, Saunders, 1967. xii,344p, tables, diagrs, index. 45s 6d. *Saunders mathematics books*.

B The object is to supply 'what every young mathematician should know', which implies sets, relations, mappings, groups, rings, fields, limits, differentiability and integration. This is given rigorously and in modern idiom with sensible motivation, and the emphasis is on clear thinking and not on manipulative skills. The book should help the pupil and his teacher in that transitional phase normally occurring in the first university year.

HANDSCOMB, D. C. ed.

107

Methods of numerical approximation: lectures delivered at a Summer School held at Oxford University, September 1965. London, NY, [etc], Pergamon P, 1966. ix,218p, tables, diagrs, refs, index. 3 grs.

C In computation, it is frequently necessary to replace an intractable function by a simpler one giving sufficient accuracy in the particular context. The increasing electronic computing power increases the amount of approximation being done, and demands a higher degree of understanding on the part of the user. The book blends rigour and intelligibility, and should be useful for many years. There are few rival texts

KAPLAN, W.

108

Introduction to analytic functions. Reading (Mass.), London, Addison-Wesley, ©1966. ix,212p, diagrs, index, bibliog. 45s. *Addison-Wesley series in mathematics*.

B This is an elementary textbook, suitable for students of science and engineering. An unusual feature of the book is a chapter devoted to functions of several complex variables. Another long chapter is devoted to conformal mapping and its applications in physics and engineering.

LAMPERTI, J.

109

Probability: a survey of the mathematical theory. NY, Amsterdam, Benjamin, 1966. x,150p, diagrs, index, bibliog. \$6.00. *Mathematics monograph series*.

B-C This book provides a brief survey of the main lines of development in probability theory at postgraduate or advanced undergraduate level. A working knowledge of measure theory is assumed as the foundations given in the book are very brief. The topics covered are: laws of large numbers and series, limiting distributions and the 'central limit problem', and stochastic processes.

- LEFORT, G. 110
 Algebra and analysis: problems and solutions. Tr. by Scripta Technica, tr. edited by B. R. Gelbaum. Amsterdam, North-Holland, 1966. xii, 590p, tables, diagrs, index. 72s. [First pub. Paris 1964.]
B A valuable collection of exercises and solutions for the final school year and university work, in the modern idiom. Though designed as a companion to *Mathématiques générales*, by Pisot and Zamansky, it could be used in conjunction with any good modern text on undergraduate algebra and analysis, and the fullness and clarity of the solutions should be very helpful to the student obliged to work largely on his own.
- POSTNIKOV, M. M. 111
 Variational theory of geodesics. Tr. by Scripta Technica, ed. by B. R. Gelbaum. Philadelphia, London, Saunders, 1967. viii, 200p, appendix, index. 2 gns. *Saunders mathematics books*.
C A monograph for those specializing or beginning research in modern differential geometry, particularly Morse's theory. The nature of surfaces and their analytical specification leads to calculus of variations methods for paths on general manifolds. A solid grounding of calculus is said to be all the foundation required, but the reader will be helped by knowing a little about classical differential geometry, topology and tensor calculus.
- SNYDER, M. A. 112
 Chebyshev methods in numerical approximation. Englewood Cliffs (NJ), Prentice-Hall, ©1966, x, 114p, tables, diagrs, appendix, index, bibliog. 60s. *Prentice-Hall series in automatic computation*.
B-C Useful introduction to the practical use of Chebyshev polynomials, well-written, comprehensive and yet concise. It should appeal to a wide range of students and research workers concerned with the increasingly important subject of optimal approximation.
- TOMBER, M. L. 113
 Introduction to contemporary algebra. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xi, 429p, diagrs, index. 64s. *Prentice-Hall mathematics series*.
B A pleasant text readable by any sixthformer with an interest in modern mathematics. The pace is easy, the treatment not too abstract, with interesting historical notes. Besides the concepts of groups and number fields (real and complex), polynomials and algebraic equations, there is a little about linear programming and an introduction to number theory.
- VLADIMIROV, V. S. 114
 Methods of the theory of functions of many complex variables. Tr. by Scripta Technica, edited by L. Ehrenpreis. Cambridge (Mass.), London, MITP, ©1966. xii, 353p, diagrs, refs, index. \$12.00. [First pub. Moscow 1964.]
C There are few books in this highly specialized field. This expounds the difficult and important branch of pure mathematics known as functions of several complex variables, which is really a different subject from functions of one complex variable. At the end are some parts useful in axiomatic quantum field theory, a branch of theoretical physics.
- WALSH, J. ed. 115
 Numerical analysis: an introduction. Based on a symposium organized by the Institute of Mathematics and its Applications, Birmingham, 1965. London, NY, Academic P, 1966. xiv, 212p, diagrs, refs, indexes. 60s.
B This survey by sixteen experts deals with linear algebra, ordinary and partial differential equations, approximation and minimization techniques, operational research, applications to pure mathematics and to industry, and the place of computation in school and university teaching. Most sections are self-contained: none can go deeply into detail, but the breadth of treatment is remarkable, and adequate references for further reading are supplied. It would be difficult to name a better general introduction.
- 53 Physics**
- FERRARO, V. C. A. and PLUMPTON, C. 116
 Introduction to magneto-fluid mechanics. 2nd ed. OUP, 1966. 254p, plates, tables, diagrs, index, bibliog. 50s hard; 25s paper.
B An excellent introduction to the mechanics of electrically conducting fluids. The chief topics are flow, stability, shocks, and the properties of individual particles and plasmas in mag-

netic fields. The book is suitable for both physicists and mathematicians at undergraduate level, and aeronautical engineers will also find it useful.

FUJITA, S.

117

Introduction to non-equilibrium quantum statistical mechanics. Philadelphia, London, Saunders, 1966. xi, 165p, tables, diags, refs, indexes. 35s. *Studies in physics and chemistry*.

C An introductory account at postgraduate level of time-dependent changes and irreversibility in many body-systems with particular reference to assemblies of free electrons in a random potential field subject to external forces, and the behaviour of dilute gases. The relevant quantum mechanics is reviewed; time-dependent perturbation is introduced and applied to scattering; the Pauli, Boltzmann, Van Hove and Prigogine-Résibois equations are discussed in detail. The monograph concludes with applications to transport phenomena, both thermal and electrical.

INSTITUTE OF PHYSICS and THE PHYSICAL SOCIETY

118

Reports on progress in physics, vol. XXIX (1966), parts I and II. Executive ed. A. C. Stickland. The Institute of Physics and The Physical Society, 1966. 371p; [385p], tables, diags, refs. 5 gns each (2 gns each to members).

B-C These two volumes maintain the high standard of earlier volumes in the series. Authoritative review articles of this sort are invaluable not only to physicists but to research workers in many fields. The first part contains papers on high temperature creep in metals, plasma spectroscopy, nuclear reactions, isotope shifts, crystal lattices, the fluctuation dissipation theorem, spin waves in ferromagnets and transport phenomena in liquids. The second part covers electron scattering, superconductors, the origin of the elements, cosmological models, plasma oscillations, transition metal ions and interferometric spectroscopy.

MARVAN, M.

119

Negative absolute temperatures. London, Iliffe; Prague, SNTL, 1966. 70p, table, diags, index. 7s 6d. *Physics paperbacks*.

B A short monograph suitable for first-year university students. Describes the statistical basis of temperature and its application to spin systems where negative absolute temperature is possible (for example lasers and masers), and concludes with a discussion of the conflict with classical thermodynamics.

120

NOBEL LECTURES including presentation speeches and laureates' biographies: physics, 1901-1921. Elsevier, for the Nobel Foundation, 1967. xii, 498p, plates, tables, diags, indexes. 180s.

A As with the other volumes in this series, Nobel Laureates' lectures together with presentation addresses and short biographies are presented. This is a particularly rewarding volume recording the major advances in physics in the early years of this century. Names which appear include Roentgen, the Curies, Rayleigh, J. J. Thomson, Marconi, van der Waals, Bragg, Max Planck, and Einstein.

537 *Electricity*

LLEWELLYN-JONES, F.

121

Ionization avalanches and breakdown. Methuen, 1967. viii, 103p, tables, diags, refs, index. 25s hard; 13s 6d paper. *Methuen's monographs on physical subjects*.

B Defines current position in the analysis and understanding of the physics of the electrical breakdown of gases. Describes modern techniques for investigating atomic, ionic and electronic collisional processes, the production and destruction of metastable atoms, photon delay processes, ionization currents in gases, electrical breakdown of vacuum gaps and static breakdown of gases at the higher pressures. Supplements the author's *Ionization and breakdown of gases* in this series, the numbering of the international references following those in the previous book in one sequence.

539.1 *Nuclear Physics*

GOURDIN, M.

122

Unitary symmetries and their application to high energy physics. Amsterdam, North-Holland, 1967. xi, 303p, tables, diags, refs, appendix, index. 86s.

C This book surveys the application of unitary symmetry group theory to elementary particle physics. The reader is assumed to be familiar with the SU(2) unitary group. The first seven chapters examine the role of SU(3) in strong, electromagnetic and weak interactions. The

extension of SU(3) to SU(6) is dealt with in the following four chapters. The book ends with six mathematical chapters intended for physicists.

ROWLATT, P. A.

123

Group theory and elementary particles. Longmans, 1966. x, 97p, tables, diagrs, appendixes, index, bibliog. 25s. *Mathematical physics series*. Paperback.

C A clear, rather condensed account of the basic ideas and properties of simple Lie algebras underlying current applications of group theory to the classification of fundamental particles. After a brief introduction to elementary particles the text covers sets, algebras and groups, theorems and properties of simple Lie algebras, matrix representation of operators, irreducible representations and the calculation of matrix elements by direct methods, Kronecker multiplication and alternation.

54 Chemistry

EYRING, L. ed.

124

Progress in the science and technology of the rare earths, vol. 2. NY, London, [etc]. Pergamon P, 1966. 366p, tables, diagrs, refs, indexes, bibliog. 5 gns. [Vol. 1 revd July 1964 no. 372.]

B-C Informative chapters on preparation of the metals, molecular field model of exchange coupling in various rare earth compounds, thermodynamic and magnetic properties of the chalcogenides and pnictides, chemical and physical properties of the halides, pure oxides and complexes and (the largest chapter—980 references) on uses and applications.

HOLMAN, R. T. ed.

125

Progress in the chemistry of fats and other lipids, vol. 8. London, NY, [etc], Pergamon P, 1966. xx, 436p, plates, tables, diagrs, refs, indexes. 120s. *Progress series*.

C The high standard of this series is maintained by this widely ranging, well balanced assortment of articles which are in most cases fully documented. They are directed to meet the needs of research workers and others requiring presentation at an advanced level. The first and longest article deals with phospholipids and biomembranes, a field which has attracted study and speculation for many years and which has not been reviewed very frequently. An article on carotenoid chemistry, especially synthetic, structural and spectroscopic aspects, is followed by others on nuclear magnetic resonance of fatty acids and glycerides, on the relationship of infrared spectra and conformation, and by three articles on thin layer, paper and column chromatography respectively.

KAMBARA, T. ed.

126

Modern aspects of polarography: a tribute to Isamu Tachi. NY, Plenum P, 1966. iii, 245p, frontispiece, tables, diagrs, refs, index. \$10.00.

C Professor Tachi was the Japanese founder of organic polarography. Most of the thirty papers in this volume are authoritative, up-to-date reviews of many of the more important branches of polarographic and related techniques, contributed by acknowledged experts. This volume provides an important contribution to the literature of polarography and electrochemistry.

KORNILOV, I. I.

127

Chemistry of metallides; tr. from Russian by J. W. Loweberg. NY, Consultants Bureau, 1966. xi, 156p, tables, diagrs, refs. \$22.50. Paperback.

C This is a useful collection of data culled from mainly Russian sources, but with a fair sprinkling of world literature. It is a list of facts rather than a text to explain them.

LUKEVITS, E. Y. and VORONKOV, M. G.

128

Organic insertion reactions of group IV elements. Tr. from Russian by M. J. Newlands. NY, Consultants Bureau, 1966. xii, 413p, tables, diagrs, refs, indexes. \$25.00.

C A systematic collation of all known data on the addition of organic and inorganic derivatives of silicon, germanium and tin to multiple bonds in unsaturated compounds. The fourteen tables which make up the bulk of the text contain data on all known reactions in the fields of these three elements up to 1963. The list of 813 literature and patent citations brings this bibliography up to July 1965, with subsequent advances as footnotes.

MATHIESON, D. W. ed.

129

Nuclear magnetic resonance for organic chemists. London, NY, Academic P, for the Royal Institute of Chemistry, 1967. ix, 287p, tables, diagrs, refs, appendix, indexes. 65s.

B This book is based on the lectures given at a NATO Summer School in 1964, which dealt primarily with the interpretation of NMR spectra in terms of molecular structure. The authors are known not only for their research contributions but for their teaching of the subject. Many spectra are discussed and numerous problems are provided. Most of the book deals with spectra due to hydrogen, but one chapter discusses NMR studies of other nuclei. The instrumental side is not treated. A very useful book for research workers in organic chemistry.

130

NOBEL LECTURES including presentation speeches and laureates' biographies: chemistry, 1901-1921. Elsevier, for the Nobel Foundation, 1966. xii, 409p, plates, tables, diags, indexes. 180s.

A This volume presents the Nobel Laureates' own accounts of their research which led to their outstanding discoveries, together with the presentation addresses to them and short biographies. Included are the lectures of such figures as Arrhenius, Ramsay, Rutherford, Ostwald, Marie Curie, Grignard and Sabatier, Richards, Nernst and Soddy and the book is a most important and readable contribution to the history of chemistry.

55 Geology. Meteorology

AHRENS, L. H. *ed. and others*

131

Physics and chemistry of the earth, vol. 7. Eds L. H. Ahrens, F. Press, S. K. Runcorn and H. C. Urey. London, NY, [etc], Pergamon P, 1966. v, 337p, tables, diags, refs, indexes. 5 gns. *Progress series*. [Vol. 6 revd March 1966 no. 134.]

C Contains three major papers: the first is an interesting and valuable, if somewhat controversial, paper by Dearnley on world orogenies, recognizing continental drift and combining Sutton's (1963) 'chelonogenic' provinces with Runcorn's convection hypothesis. The second paper by Bath on earthquake energy and magnitude considers methods and principles based on seismographs and will interest geophysicists. The final long paper is by Haskin and others on meteoritic, solar and terrestrial rare-earth distributions, the emphasis being on abundancies in chondritic meteorites.

DAY, J. A.

132

Science of weather. Reading (Mass.), London; [etc], Addison-Wesley, ©1966. x, 214p, plates, tables, diags, appendix, indexes. 40s.

A-B A description of man's environment written for the non-scientist who will become aware of a vast field of scientific endeavour and interest. With a simple discussion of the physical processes involved, covers cloud classification (good photographs of what to look for), cloud seeding, thunderstorms, climatology, solar radiation and satellite observation.

57 Anthropological and Biological Sciences

HARRIGAN, W. F. *and* MCCANCE, M. E.

133

Laboratory methods in microbiology. London, NY, Academic P, 1966. xi, 362p, tables, diags, refs, appendixes, indexes, bibliog. 79s.

B A rather specialized book for bench use by students and laboratory workers in agricultural, dairy and food microbiology. There are sections on basic microscopy and cultural techniques; the examination of water, milk, dairy products and other foods, silage and soil; the identification of economically important bacteria, yeasts and moulds; recipes for media and reagents; and MPN tables.

58 Botany

DALLIMORE, W. *and* JACKSON, A. B.

134

Handbook of coniferae and ginkgoaceae. 4th ed. revd by S. G. Harrison. Ill. by G. Lister and H. R. W. Herbert. Edward Arnold, 1966. xix, 729p, illus, plates, tables, index. 8 gns.

D For over forty years this work has been the accepted reliable manual dealing with coniferous trees, but since the last edition in 1948 a number of new species have been described, and there have also been so many taxonomic and nomenclatural changes that a revised edition was required if the volume was to preserve its value. The quality of some of the illustrations by modern standards is deficient, but the authority of the book is maintained.

WILLIS, J. C.

135

Dictionary of the flowering plants and ferns. 7th ed. revd by H. K. Airy Shaw. CUP, 1966. xxii, 1214p, liii, index. 100s.

D This well-known reference work has been an invaluable handbook to all who seek easy access to names of flowering plants and ferns, and the new edition, which is entirely a catalogue of genera and families, will continue to be a convenient and indispensable reference source. Unfortunately the exigencies of space have resulted in the exclusion of botanical terms, common and vernacular names and economic products, and so the character of the book has been considerably altered.

6 APPLIED SCIENCES

621 *Mechanical and Electrical Engineering*

BULGAKOV, A. A.

136

Electronic automatic control devices. Tr. by R. Grabiec and F. Immirzi, edited by P. H. Walker. London, NY, [etc], Pergamon P, 1966. xxiv, 549p, plates, tables, diagrs, refs, appendixes, index. 120s.

B-C An excellent text but very narrow in range, mainly dealing with semi-obsolescent thermionic valves, particularly the thyatron. The first 'introduction' is a late attempt to bring the book up to date, giving a sensible but necessarily superficial account of modern control devices, notably the thyristor.

MURPHY, G. J.

137

Basic automatic control theory. 2nd ed. London, NY, [etc], Van Nostrand, ©1966. xiii, 832p, tables, diagrs, refs, appendixes, index. 118s. *Van Nostrand series in electronics and communications*.

B-C This book covers a wide range of control theory starting at introductory level with standard topics, frequency response, stability and design, sampled data systems. A chapter on a.c. carrier systems has more than usual emphasis on compensation methods. The later portion introduces more advanced aspects, probability and random processes, design of optimum systems. The treatment is purely theoretical, matrix algebra being required for the more advanced topics.

TAKAI, H.

138

Theory of automatic control. Tr. by Scripta Technica, edited by E. J. Feakes. Iliffe, 1966. 10, 315p, tables, diagrs, appendix, index. 75s. [First pub. Tokyo 1961.]

A-B Signal transmission through control systems and a lengthy treatment of Laplace transforms introduce system performance in the time domain and in the frequency domain in terms of Bode and Nyquist. The latter half of the book examines system design and synthesis from frequency response and root configuration standpoints, and briefly introduces nonlinear and sampled data analysis techniques. The presentation of fundamental ideas, together with numerous exercises (with answers), makes it a useful reference book for control graduates.

621.3 *Electrical Engineering*

CARL, H.

139

Radio relay systems. Ed. by Standard Elektrik Lorenz AG, Stuttgart. Macdonald, ©1966. viii, 232p, plates, tables, diagrs, refs, index. 65s. [First pub. Stuttgart 1964.]

B A very comprehensive coverage of the principles and techniques of radio relay links. Basic system configuration and planning is included as well as the more technical aspects of propagation characteristics, modulating systems and signal-to-noise ratio. A special chapter is devoted to examples of important radio links.

DEFRANCE, J. J.

140

Communications electronics circuits. NY, London, [etc], Holt, Rinehart & Winston, ©1966. xiii, 548p, tables, diagrs, index. 76s.

B A useful comprehensive textbook for the serious student of telecommunications principles. This single volume covers all the basic circuitry in common use today, both valve and semiconductor types, but requires a fundamental knowledge of d.c. and a.c. principles, valve and semiconductor characteristics and a mathematical standard approximating to ONC level.

MCCOMBE, J. and HAIGH, F. R.

141

Overhead line practice. 3rd ed. Macdonald, 1966. 388p, plates, tables, diagrs, refs, appendixes, index. 35s.

B A good practical work of value to the linesman wishing to advance his knowledge, and to the engineer entering the field. The mechanics of line design are adequately covered by worked examples. The principles of inductive interference, earthing and lightning protection are briefly dealt with. Good references to further reading are given.

REICH, H. J., SKALNIK, J. G. and KRAUSS, H. L.

142

Theory and applications of active devices. NY, London, [etc], Van Nostrand, ©1966. xii,739p, tables, diagrs, refs, appendix, indexes. 102s. *Van Nostrand series in electronics and communications*.

B The book deals with both semiconductors and valves. A fair amount of semiconductor theory is given: this includes not only bipolar transistors, but also field-effect transistors and thyristors. The theory of vacuum and gas-filled valves is also given. The circuit applications described are usually based on general active devices, but specific examples of transistor or valve circuits are given.

WATERS, M.

143

Short-circuit strength of power transformers. Macdonald, 1966. 157p, plates, tables, diagrs, refs, index, bibliog. 45s.

C The definitive work, summarizing and clarifying most published knowledge on a subject of extreme practical importance, treated too briefly (if at all) in standard design textbooks. There are few omissions. Prior knowledge of electrical engineering symbolism is assumed.

621.5 Pneumatic Energy. Refrigeration

INTERNATIONAL INSTITUTE OF REFRIGERATION

144

Practical guide to refrigerated storage. London, NY, [etc], Pergamon P, 1966. 239p, plates, tables, diagrs, refs, bibliog. 60s. *Commission 5*.

D A practical guide to those engaged in the operation of cold stores and refrigerated space generally. It is the result of the collective work of a number of internationally known experts on cold storage, and it brings together the main factors to be taken into account by those concerned with refrigerated space.

63 Agriculture. Forestry. Livestock. Fisheries

AMERICAN CHEMICAL SOCIETY

145

Organic pesticides in the environment: a symposium co-sponsored by the Division of Water, Air, and Waste Chemistry and the Pesticide Subdivision of the Division of Agricultural and Food Chemistry at the 150th Meeting of the Society, Atlantic City, September 1965. Washington (DC), the Society, 1966. x,309p, plates, tables, diagrs, refs, index. \$8.50. *Advances in chemistry series*, 60.

C Twenty-three papers on the biological implications of the presence of pesticides in air, soil and water, concerned largely with methods of analysis, mammalian toxicity and eventual degradation of these compounds. Of interest to pesticide analysts and toxicologists.

AMERICAN CHEMICAL SOCIETY

146

World protein resources: a symposium sponsored by the Division of Agricultural and Food Chemistry at the 150th Meeting of the American Chemical Society, Atlantic City, September 1965. Washington (DC), the Society, 1966. xvii,285p, plates, tables, diagrs, refs, index. \$7.00. *Advances in chemistry series*, 57.

B It is calculated that the world population explosion means that twice as much protein will be needed by the year 2000 to maintain present nutritional standards. All types of protein are surveyed, animal, plant and fish. The outlook for protein supplies, seed protein products, and protein quality as well as future developments including fungi, bacteria and coal as sources are considered. Twenty papers by experts which are well supplied with literature citations.

COOKE, G. W.

147

Control of soil fertility. Crosby Lockwood, 1967. xvii,526p, tables, diagrs, appendixes, index, bibliog. 70s. *Agricultural and horticultural series*.

B This work covers the general principles of crop nutrition, in relation to developments over the last decade in the utilization of fertilizers and organic manures in different farming systems. Emphasis is on the newer practices rather than on past techniques—some 450 of the 660 literature references were published in the last six years. The work is written with the

needs of the farmer and agricultural advisers, concerned with improving soil fertility and developing new farming methods and cropping systems, in mind. Although the experimental basis is largely British in origin, it is of wider geographical relevance; especially, though not entirely, in the temperate zones. The control of pests, diseases and weeds and the question of water supply are not covered in this book, which has five main sections dealing with plant nutrients in the soil, fertilizers and manures, plant nutrient cycles, practical use of fertilizers and soil productivity in varying systems of land use. There are useful appendixes on weights, measures and conversion factors, scientific terms and soil characteristics.

66 Chemical Technology

HASSLER, J. W.

148

Activated carbon. Leonard Hill, 1967. xii,397p, tables diagrs, refs, appendix, index. 60s. *Chemical and process engineering series*.

B The edition first published in America has been revised to survey the advances made in the past fifteen years. It covers mainly the industrial applications of active and activated carbons in adsorptive processes, and is of interest to industrial chemists seeking user experience.

ZABRODSKY, S. S.

149

Hydrodynamics and heat transfer in fluidized beds. Tr. by Scripta Technica Inc, edited by F. A. Zenz. Cambridge (Mass.), London, MITP, ©1966. xii,379p, tables, diagrs, index, bibliog. 113s.

C A critical review of all significant work on the subject (including mass transfer and related topics) useful for research workers and designers. Most of the extensive work of east European origin is translated for the first time and integrated. There are 1254 references.

67/68 Manufactures

COOK, J. G.

150

Handbook of polyolefin fibres. Watford (Herts), Merrow, 1967. x,602p, tables, diagrs, index. 60s.

B-D This is based largely on manufacturers' literature and it provides detailed information about polyethylene and polypropylene fibres (especially the latter), and individual commercial fibres. There are sections on commercial development and market prospects, production, structure and properties, textile processing (spinning on different systems, weaving, knitting, sewing, dyeing, finishing), and uses. Polyolefin fibres are dealt with in some twenty pages in the same author's *Handbook of textile fibres* (1964) excluding the directory section (revd February 1965 no. 109).

GARNER, W.

151

Textile laboratory manual; vol. 1, qualitative methods; vol. 2, resins and finishes. 3rd ed. London, Heywood Books; NY, American Elsevier, 1966. 20, 256p; 12,124p, tables, diagrs, refs, appendix, index. 55s; 35s.

B-C Volume 1 is an uncritical collection of concise information about chemical reagents and test methods relevant to problems encountered in textile works laboratories. Volume 2 gives information about materials used for finishing textiles such as occurrence or preparation, structure, properties and, particularly, identification and analysis. Collectively, these books are useful reference manuals for the works chemist.

HALL, A. J.

152

Textile finishing. 3rd ed. London, Heywood Books; NY, American Elsevier, 1966. 453p, plates, tables, diagrs, index. 5 gns.

B-C This edition has been expanded to give more detail and references to modern developments, particularly on resin finishing and improvement of serviceability, such as proofing. It is expensive, however; the last edition cost 25s.

KORNREICH, E.

153

Introduction to fibres and fabrics: their manufacture and properties. 2nd ed. London, Heywood; NY, American Elsevier, [1966]. 12,212p, plates, tables, diagrs, appendixes, index, bibliog. 37s 6d. Paperback.

A-B This is a useful introductory text on textile fibres, their production and comparative properties; yarns and fabrics, and their manufacture; and textile finishing processes. Line drawings are used effectively to illustrate principles. Wear and tear of textile articles is dealt with briefly, and the trade-names of man-made fibres are listed in an appendix. It is expensive: the first edition (1952, hardback) was published at 1 gns.

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NO. 4

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0 SCIENCE AND KNOWLEDGE

007 *Information. Communication. Control Theory*

STONE, P. J. and others

154

The General Inquirer: a computer approach to content analysis. By P. J. Stone, D. C. Dunphy, M. S. Smith and D. M. Ogilvie. Cambridge (Mass.), London, MITP, ©1966. xx, 651p, tables, diags, indexes, bibliog. \$12.50.

C Content analysis is defined by the authors as 'any research technique for making inferences by systematically and objectively identifying specified characteristics within text'. The 'General Inquirer' is the name given to the particular system devised by the authors at Harvard University for identifying recurrent patterns in oral and written communication, particularly within the field of the social and behavioural sciences. The first part of the book explains both the notion of content analysis and the development of the General Inquirer, and the second demonstrates the application of the technique, mainly in the fields of political science, psychology and anthropology. Emphasis is on the 'research strategy' with computer technicalities kept to a minimum, and the book should interest a very wide audience.

3 SOCIAL SCIENCES

31 Statistics

CRUON, R. ed.

155

Queuing theory: recent developments and applications. A conference, under the aegis of the NATO Science Committee, Lisbon, 27th September-1st October 1965. EUP, 1967. 224p, tables, diags, refs, appendix. 65s. Paperback.

C This is a most important report, produced in sixteen months and fully deserving a place on the library shelf whether public, private or personal. The fact that some of the papers are in French should not deter any reader, because there is a bilingual glossary of terms in the appendix. Each of the six sessions contains an invited paper together with other contributions; the authors are from NATO countries, but the topics discussed are not strongly oriented towards defence problems. The concluding paper by Saaty, a famous name in this field, is broadly philosophic and should be required reading for everyone.

MENSCH, A. ed.

156

Theory of games: techniques and applications. The proceedings of a conference under the aegis of the NATO Scientific Affairs Committee, Toulon, 29th June-3rd July 1964. EUP, [1967]. 490p, tables, diags, refs, bibliog. 75s. Paperback.

C This report has taken a long time to appear. The papers are designedly oriented towards defence problems at both tactical and strategic levels. They are not easy reading, but this is due to the inherent difficulty of the main subject rather than the competence of the contributors. Nearly one-third of the papers is in French and it is a matter of regret that provision is not made for a bilingual glossary of terms. The first part deals with mathematical methods and the second part with applications in the defence field; some general papers form the closing part. The NATO Science Conferences are an important series and this is no exception; anyone involved with this difficult topic, or a library serving such people, will need to have this readily available.

33 Economics

THEIL, H.

157

Economics and information theory. Amsterdam, North-Holland, 1967. xxii, 488p, tables, diags, index, bibliog. 120s. *Studies in mathematical and managerial economics*.

C Any library serving a group concerned with applying numerical methods to economic problems, embedded in situations where decisions have to be taken under conditions of uncertainty, will need this book. It is for the professional, but the practical examples given are enough to encourage anyone involved with economic planning at national, regional, industrial or corporate level to use the basic studies presented. The author shows how probability theory indirectly affects applied economics, through statistical techniques, and directly enters into theoretical economics through decision theory. He shows that basic probability concepts are a special case of allocation (of confidence) and economics is essentially concerned with optimum allocation of scarce resources capable of alternative uses. Economic

situations appearing in this text include production planning, inequality of incomes, comparison of price and quantity, consumer allocation, input/output analysis and industrial concentration.

5 MATHEMATICS AND NATURAL SCIENCES

51 Mathematics

CATER, F. S.

158

Lectures on real and complex vector spaces. Philadelphia, London, Saunders, 1966. x, 167p, index, bibliog. 35s. *Saunders mathematics books*.

C Much material on operator algebras is contained in the concise text and the large number of problems illustrating and extending the text. The earlier sections require only a knowledge of the complex number field and a little set theory. Later sections are more sophisticated, but techniques are held at a fairly elementary level and avoid extensive calls on rings and ideals. A book for the intending specialist in algebra of operators.

EVGRAFOV, M. A.

159

Analytic functions. Tr. by Scripta Technica, ed. by B. R. Gelbaum. Philadelphia, London, Saunders, 1966. x, 336p, diags, index. 2 gns. *Saunders mathematics books*.

B Mainly classical theory of functions for the honours degree specialist. Special features are the early discussion of many valued functions, Riemann surfaces and analytic continuation, an account of harmonic and subharmonic functions and an introduction to the Nevanlinna theory. The analysis is clear, but somewhat concise in the later chapters. There are no exercises.

HOFMANN, K. H. and MOSTERT, P. S.

160

Elements of compact semigroups. Columbus (Ohio), Merrill Books [distrib. by Prentice-Hall], [1967]. xiii, 384p, plates, diags, appendixes, index, bibliog. 120s. *Merrill research and lecture series*.

C A research monograph for those already well informed on semi-groups. A main objective is to derive two fundamental theorems on structure, related to the uniquely determined minimal ideal. The material, almost entirely of recent origin, is well organized, and the book will be of value as a reference work and as a programme for research in this highly abstract field.

JAMES, R. C.

161

Advanced calculus. Belmont (Calif.), Wadsworth [distrib. by Prentice-Hall], [1967]. x, 646p, diags, index. 100s.

B The book is an introduction to analysis suitable for university courses. It follows the usual lines of development: introduction to set theory and functions, differentiation; integration; convergence, multiple integration, partial differentiation; vectors and transformations. Concepts are developed rigorously and there is emphasis on their applications. An interesting feature of the book is the remarks on historical controversies which took place during the development of mathematics. Finally, an introduction to orthogonal functions and measure theory in the last chapters provides a starting-point for more advanced studies in analysis. Exercises are provided.

JONES, D. S.

162

Generalized functions. London, NY, [etc], McGraw-Hill, ©1966. xii, 482p, tables, diags, index. 95s. *European mathematics series*.

B A detailed treatment suitable for undergraduates is based on the simplified theory of Temple and Lighthill. The properties of good functions, in one variable or several, are established by simple analysis, with emphasis on Fourier theory and applications to differential and integral equations. The Laplace transform is generalized to cope with weak functions. Clear exposition and a good supply of exercises make this an extremely valuable introduction.

OGILVY, C. S. and ANDERSON, J. T.

163

Excursions in number theory. OUP, [1967]. 168p, tables, diags, index. 35s.

A An excellent, genuinely introductory text, demanding only a knowledge of school algebra, dealing with primes, congruences, Diophantine equations, continued fractions and Fibonacci numbers. The pace is easy, the explanations are full and clear and the content is genuine mathematics, rarely descending to trivialities. Notes give ample suggestions for further reading.

- PETERSEN, G. M. 164
Regular matrix transformations. London, NY, [etc], McGraw-Hill, ©1966.
viii, 142p, index. 50s. *European mathematics series*.

C Most summation processes for divergent sequences have a matrix representation. The first two chapters discuss important special summation processes. The later chapters develop a general classification of matrices by properties of the sets of sequences which they sum, assisted by the concept of bounded sequences as a Banach space. The book is suitable for honours degree students specially interested in the theory of series, and should stimulate research in this field.

- SILVERMAN, R. A. 165
Introductory complex analysis. Englewood Cliffs (NJ), Prentice-Hall, ©1967.
xi, 372p, diags, index, bibliog. 70s.

B Based on the author's translation of Markushevich's three-volume treatise, this gives a good first course in the classical theory, with more attention than is usual to a detailed study of the elementary functions, to conformal mapping (including the Schwarz-Christoffel transformation) and to harmonic functions. Clear analysis and plenty of worked and un-worked exercises make the book suitable for undergraduate courses.

52 Astronomy. Surveying. Geodesy

- ALFVEN, H. 166
Worlds—antiworlds: antimatter in cosmology. San Francisco, London, Freeman, [1967]. 103p, plates, tables, diags. 25s.

A-B A concise and clear account for the general reader of new cosmology, following recent well-known experiments in elementary particle physics concerning symmetry in the production of particles and antiparticles. The first chapters are historical and help the reader not sufficiently familiar with the subject to appreciate the thinking behind the new theory. The author is Professor of Plasma Physics at the Royal Institute of Technology, Stockholm, and the book was first published in Swedish in 1966.

- MOORE, P. ed. 167
Yearbook of astronomy 1967. Eyre & Spottiswoode, 1966. x, 183p, tables, diags, refs, index. 18s paper; 30s cloth.

A The general style and content of this yearbook is unchanged, except that a short review article on quasi-stellar objects by E. M. Lindsay, Director of the Armagh Observatory, with many references to the scientific literature has been included. There are the usual sections on astronomical events in 1967, and articles on the Isaac Newton telescope, the craters on Mars and other topics of current interest.

53 Physics

- KALIKHMAN, L. E. 168
Elements of magnetogasdynamics. Tr. by Scripta Technica, ed. by A. G. W. Cameron. Philadelphia, London, Saunders, 1967. xvii, 366p, plates, tables, diags, refs, index. 61s. *Saunders physics books*.

C This is a useful reference book for both the theoretician and experimentalist, as many important results in a rapidly expanding field of study are brought together, with an emphasis on boundary phenomena. A good basic knowledge of plasma physics and hydrodynamics is assumed throughout.

- KRATOCHVÍL, P. 169
Crystals. Tr. by A. Fořt, ed. by A. Thomas-Betts. London, Iliffe; Prague, SNTL, 1967. 111p, plates, tables, diags, index. 15s. *Physics paperbacks*.

C A concise and well written book divided into four parts. These deal with atomic bonding, crystal structure and imperfections, the growth and purification of single crystals, and properties and applications. The text is well illustrated.

- LAMB, D. R. 170
Electrical conduction mechanisms in thin insulating films. Methuen, 1967.
xvi, 114p, tables, diags, refs, index. 25s. *Methuen's monographs on physical subjects*.

B An elementary introduction to the theory of ionic and electronic conduction in amorphous and polycrystalline insulating films. Space charge limited currents in one- and two-carrier

systems, tunneling, field emission and impurity conduction are discussed and the results of the theories compared with recent experimental work. A final chapter describes the dielectric diode and triode and the development of heterojunction devices.

MARTIN, D. H.

171

Magnetism in solids. Iliffe, 1967. 10,452p, frontispiece, tables, diagrs, refs, index, bibliog. 120s.

B-C A particularly clear and well presented account of a difficult subject, broad in coverage, yet of sufficient depth to bring the main topics of magnetism to the point of present work in the field. A review of the magnetic properties of matter is followed by very valuable accounts of the quantum mechanics of ions in crystals, spin operators and exchange interactions in solids and the statistical mechanics of ordering in magnetic solids and spin-wave excitation.

MILNE-THOMSON, L. M.

172

Theoretical aerodynamics. 4th ed. London, Melbourne, Toronto, Macmillan; NY, St Martin's P, 1966. xviii,430p, frontispiece, tables, diagrs, index. 50s.

B This standard student textbook has been slightly revised and enlarged, mainly by the inclusion of additional material on supersonic flow. The bulk of the text deals with irrotational flows and no attention is given to either transonic or hypersonic flow.

SPARROW, E. M. and CESS, R. D.

173

Radiation heat transfer. Belmont (Calif.), Brooks/Cole [distrib. by Prentice-Hall], ©1966. xii,322p, tables, diagrs, refs, appendixes, indexes. 68s.

C The first part of this book discusses the basic principles of radiation, and a link is made with electromagnetic theory. The two subsequent parts deal in turn with 'radiative interchange among surfaces separated by radiatively nonparticipating media' and 'radiant energy transfer through absorbing, emitting and scattering media'. The treatment is up to date and unique in the breadth of its coverage and has a strong theoretical bias.

54 Chemistry

CHAPMAN, D. and MAGNUS, P. D.

174

Introduction to practical high resolution nuclear magnetic resonance spectroscopy. London, NY, Academic P, 1966. ix,112p, tables, diagrs, refs, index. 25s. Paperback.

B The number of introductory texts to nuclear magnetic resonance spectroscopy of organic compounds is rapidly increasing. The balance between experimental aspects and the interpretation of the results varies widely. In this brief text appreciable space is devoted to experimental techniques, and the approach to the interpretation of spectra is thoroughly practical. Almost half the book comprises charts and correlation tables. A brief account is given of the theoretical basis of the spectra, and the problems which can be met are discussed. There is also a brief account of the spectroscopy, involving isotopes other than the proton.

55 Geology. Meteorology

KING, L. C.

175

Morphology of the earth: a study and synthesis of world scenery. 2nd ed. Edinburgh, London, O&B, 1967. xiii,726p, illus, plates, tables, diagrs, indexes, bibliog. 5 gns.

B-C A new edition of an important synthesis, considerably revised and with an up-to-date bibliography. The author deals with the major surface features of the continents and ocean basins in relation to the structure and history of the earth's crust. His views on such subjects as continental drift and pediplanation are forcefully but fairly presented.

STRAKHOV, N. M.

176

Principles of lithogenesis, vol. 1. Tr. by J. P. Fitzsimmons, ed. by S. I. Tomkeieff and J. E. Hemingway. NY, Consultants Bureau; London, Edinburgh, O & B, 1967. vii,245p, illus, tables, diagrs, refs. 120s.

C The subject of this scholarly Russian book is sedimentology in its broadest sense. The author examines the various processes of weathering, erosion and transportation that produce the raw materials, and the subsequent processes of sorting, deposition and lithogenesis which convert them into sedimentary rocks. He is particularly concerned with the geographical, climatic and tectonic controls of sedimentation. A large section of the book is devoted to the distribution of climatic zones of sedimentation in Phanerozoic time.

57 Anthropological and Biological Sciences

CARLSON, E. A. 177

The gene: a critical history. Philadelphia, London, Saunders, 1966. xi, 301p, tables, diagrs; refs, indexes. 3 gns.

B-C An exciting account of the development of the gene concept that is not merely a descriptive history, but a living account of the debates between strong willed men, their ideas and differences and their achievements and failures. Modern developments have not been neglected, and four of the twenty-seven chapters are concerned with developments in molecular genetics and two are devoted to general appraisals.

577.1 Biochemistry

GOODWIN, T. W. ed. 178

Instrumentation in biochemistry. Biochemical Society Symposium no. 26 held in London, April 1966. London, NY, Academic P, 1966. ix, 113p, plates, tables, diagrs, refs, indexes. 30s.

C The aspects of biochemical instrumentation dealt with in this volume include: centrifugation, microscale spectroscopy, electron spin resonance, rapid reactions studied by flow and relaxation techniques, automated analysis in nutrition, and the use of the digital computer in studying multi-enzyme systems. The coverage of the subject is, therefore, not as comprehensive as may be expected of a book of this size. However, the chapters are generally of high standard and present, for the most part, the more modern trends in the techniques discussed.

PINCUS, G. ed. 179

Recent progress in hormone research, vol. 22. Proceedings of the 1965 Laurentian Hormone Conference. NY, London, Academic P, 1966. viii, 593p, plates, tables, diagrs, refs, indexes. 200s. [Vol. 19 revd January 1964 no. 26.]

C These papers on contemporary research developments, cover the identification and characterization of new hormones such as ecdysone and prostaglandins, metabolic transformations and secretory dynamics, and mechanisms of control of hormonal secretions. This book is suitable for those with an advanced interest in these topics.

58 Botany

CORNER, E. J. H. 180

Natural history of palms. Weidenfeld & Nicolson, ©1966. 393p, illus, plates, tables, refs, appendixes, index, bibliog. 5 gns. *World naturalist*.

B This is a stimulating and indeed in some respects a provocative treatment of an ancient, cosmopolitan and diverse family. The author has spent many years in the tropics, travelling widely in the old and new worlds, where his keen observational powers and searching mind have led to a comprehensive and most detailed study of this fascinating group, of which the biology, structure, distribution and taxonomy are fully examined.

WELCH, H. J. 181

Dwarf conifers: a complete guide. Foreword by J. S. L. Gilmour. Faber, 1966. 334p, plates, tables, index. 4 gns.

A The dwarf conifers have become increasingly popular in recent years for the obvious reason that their size, wide range of tolerance and comparative ease in cultivation make them very suitable subjects for small gardens. Unfortunately the group has been rather confused regarding nomenclature and identification, and the author of this work, who has a wide experience of growing these plants, and has studied them in many collections, has brought a much higher degree of order than existed previously. The book has over three hundred illustrations, but many give little idea of the stature of the plants and are of doubtful value in helping to name them.

6 APPLIED SCIENCES**62 Engineering and Technology**

D'SOUZA, A. C. 182

Mechanics of materials. Heywood, 1966. 12, 290p, tables, diagrs, appendix, index. 65s.

B A textbook of value to all who study strength of materials as a branch of mechanical engineering. Simple presentation giving full coverage, for HNC, HND and the examinations of engineering institutions, of every aspect from stress, strain and elasticity to the mechanical properties of materials. Worked examples are included in each chapter as well as problems and answers.

- MARKOV, A. I. 183
 Ultrasonic machining of intractable materials. Tr. by Scripta Technica. Iliffe, 1966. 13,350p, plates, tables, diagrs, refs, appendixes, index. 3 gns.

B Translation of a Russian textbook of 1962 surveying some three to four hundred papers from 1955-61 on the newer techniques. The translation was recommended by the journal *Ultrasonics*. The rapid progress in both design and technique in the last five years has been incorporated into this translation by E. A. Nappiras of Imperial College. The first section surveys precision ultrasonic machinery of hard brittle materials, the second section the use of sonic and ultrasonic vibrations in cutting intractable materials. A practical reference source for both production and design engineers.

621 *Mechanical and Electrical Engineering*

- DIXON, S. L. 184
 Fluid mechanics, thermodynamics of turbomachinery. London, NY, [etc], Pergamon P, 1966. xiii,213p, diagrs, refs, index. 25s. *Commonwealth and international library of science, technology, engineering and liberal studies*. Paperback.
B A useful text containing worked examples and with set problems at the end of each chapter. The contents of the book include dimensional analysis, two-dimensional cascades, axial flow compressors and pumps, centrifugal compressors and pumps, axial-flow turbines and radial-flow turbines.

621.3 *Electrical Engineering*

- DAY, W. D. 185
 Introduction to vector analysis for radio and electronic engineers. Iliffe, 1966. 8,260p, diagrs, index. 2 gns.
B The emphasis of the book is on vector analysis, but the theory is illustrated throughout in terms of electromagnetism, so that it also serves as an introduction to this subject, although not a complete one. The book is well written, develops the concepts clearly and in detail, and is a very suitable text for undergraduate level.

- JENKINS, B. D. 186
 Introduction to instrument-transformers. Newnes, 1967. xiv,282p, plates, tables, diagrs, index, bibliog. 50s.
B The title is modest. The book will be very helpful to those about to tackle instrument transformer design or having to purchase or specify current transformers for many commonly used protective systems. It will also be useful to those concerned with accurate metering problems and be invaluable reference for practising engineers, especially those forced to infringe on the subject. It brings under one cover much valuable and hitherto scattered material.

- OLESEN, H. L. 187
 Radiation effects on electronic systems. NY, Plenum P, 1966. xv,234p, plates, tables, diagrs, refs, index, bibliog. \$16.50.
C An introduction to the effects of nuclear radiation on electronic and electrical equipment for the electronic engineer designing equipment to withstand such damage, originally produced as a reference book on radiation effects for the General Electric Re-Entry Systems Department of the US Space Program. Effects on semiconductors, materials and man; passive and active shielding; and recommended experimental methods and testing facilities are discussed. There are good bibliographies and references to each chapter.

621.7 *Workshop Practice*

- AMERICAN WELDING SOCIETY 188
 Welding handbook; section 4, metals and their weldability. 5th ed. Macmillan, ©1966. [632p] Various paging, plates, tables, diagrs, index, bibliog. 80s.
D The standard American reference book on practical weldability of typical commercial metals and alloys. Particular account is taken, for each group of materials, of the application of the range of conventional processes. No other comparable reference source is available in English.

623 *Military and Naval Engineering*

- MUNRO-SMITH, R. 189
 Applied naval architecture. Longmans, 1967. viii,413p, plates, tables, diagrs, index. 70s.

C A book primarily intended for the ship designer for whom the theory of naval architecture must be well mixed with practical experience. It thus follows naturally on the theoretical treatises and will be particularly valuable in the early years, while a designer is building up his own experience.

624 *Structural Engineering*

BLASZKOWIAK, S. and KĄCZKOWSKI, Z.

190

Iterative methods in structural analysis, tr. by A. Kacner and Z. Olesiak. London, NY, [etc], Pergamon P; Warsaw, Państwowe Wydawnictwo Naukowe, 1966. x, 590p, tables, diagrs, refs, index. 140s. [First pub. Warsaw 1959.]

B-C Comprehensive treatment of *manual* iterative processes. A logical development of Hardy-Cross's work covering linear analysis of plane frames with prismatic members, variable depth and curved members. Plasticity, stability and vibration are also dealt with. An invaluable book for engineers without access to a digital computer.

HERRMANN, G.

191

Dynāmic stability of structures: proceedings of an International Conference held at Northwestern University, Illinois, October 18-20 1965. Sponsored by the Air Force Office of Scientific Research and Northwestern University. London, NY, [etc], Pergamon P, 1967. ix, 313p, plates, tables, diagrs, refs. 120s.

C The volume contains eighteen papers covering a range of topics including the fundamental concepts and applications both to idealized structural elements like columns and shells and to practical structures like ships and launch vehicles. Although the book is not meant to be an introduction to the subject, Hoff's 'Keynote address' may prove to be of some help to the uninitiated.

MCMINN, S. J.

192

Matrices for structural analysis. 2nd ed. Spon, 1966. xii, 233p, tables, diagrs, index. 57s 6d.

B-C There are two aspects to the book. It provides a good introduction to and extensive coverage of matrix theory relevant to structural analysis presented in a suitable form for engineers. It develops structural theory in matrix form including the stiffness and flexibility approaches and application to stability and dynamic problems. The theory is in all cases illustrated by simple, clear worked examples and both line element and plated structures are considered. But the second edition is not entirely up to date despite the inclusion of a new chapter on transfer matrices.

RUBINSTEIN, M. F.

193

Matrix computer analysis of structures. Englewood Cliffs (NJ), Prentice-Hall, ©1966. xiv, 402p, tables, diagrs, refs, index. 104s. *Prentice-Hall series in engineering of the physical sciences*.

B Provides a very good introduction to the modern, matrix approach to structural theory and its application on the computer. Fundamentals are clearly dealt with and general principles emphasized. Both force and displacement methods of analysis are developed, mainly in terms of simple idealization, and a high level of application is reached.

629.19 *Astronautics*

AMERICAN ASTRONAUTICAL SOCIETY

194

Recent developments in space flight mechanics, vol. 9. Proceedings of the AAAS/AAS Special Astronautics Symposium, 29 December 1965, Berkeley, Calif. Ed. by P. B. Richards. Washington (DC), the Society [distrib. by AAS, PO Box 746, Tarzana, Calif.], ©1966. xii, 268p, plates, tables, diagrs, refs. appendix. \$11.25. *Science and technology series*.

C Seven papers on dynamics of trajectories, motion of satellites and planetary entry. The standard is advanced, but the expositions are clear and the presentation excellent. It is of fundamental interest to those concerned with orbital dynamics, the motion of space-craft in the solar system and the detailed motion of satellites.

INSTRUMENT SOCIETY OF AMERICA

195

Radioisotopes for aerospace: proceedings of the First Symposium on Radioisotope Applications in Aerospace, sponsored jointly by the US Air Force, US Atomic Energy Commission, and Instrument Society of America, held in Ohio, February 15-17 1966; part 1, advances and techniques; part 2, systems

and applications. Ed. by J. C. Dempsey and P. Polishuk. NY, Plenum P, 1966. xxx,439p; xxx,446p, plates, tables, diagrs, refs, indexes. \$20.00 each; \$37.50 set.

C The twenty-six papers of part 1 survey the latest developments in detectors, electronics, radioisotopic sources, non-destructive testing and the applications of radioisotopes to measurement problems in research and development. Part 2 contains twenty-seven papers describing measurement of such quantities as atmospheric density, altitude and ablation; the uses for missile lift-off and guidance and in various gauging systems. Isotopic power generation and propulsion, and an extraterrestrial life detector for use on Mars are two of the more exotic developments discussed. Jointly, these books give a glimpse of the range of scientific fringe benefits of the huge US space and atomic energy investment programmes.

65 Business Techniques. Management

BATTY, J.

196

Industrial administration and management. Macdonald & Evans, 1966. xiv, 495p, tables, diagrs, index, bibliog. 37s 6d.

A The book provides a readable guide to the main areas of concern to management, such as company law, marketing, personnel and finance. In none of these subjects is the treatment adequate for the specialist manager or specialist research worker, and in the case of the sections devoted to economics and statistics, operational applications are not made sufficiently clear. Nevertheless within its assumed aim, it gives a useful elementary introduction to business activities.

COWAN, A.

197

Quality control for the manager. Foreword by Lord Kings Norton, ill. by R. F. Rooke. 2nd ed. London, NY, [etc], Pergamon P, 1966. xiii,95p, illus, appendix. 12s 6d. *Commonwealth and international library of science, technology, engineering and liberal studies*. Paperback.

A Intended for the manager, this book provides a clear and interesting account of the quality control function. The underlying aims are examined and the author describes how a quality control service can be set up to serve these aims most effectively. The use of statistical techniques is indicated and their relationship to the overall quality control function is described.

66 Chemical Technology

TURNER, G. P. A.

198

Introduction to paint chemistry. C & H, 1967. xi,244p, tables, diagrs, appendix, index. 2 gns; 25s paper.

A-B Intended for the trainee paint technologist and others with no previous knowledge of chemistry, this work has already been used in the form of a course in the GLC Technical College for the Furnishing Trades. After an introductory section on general science, the author discusses the applied science of paint technology. The general aspects of paint formulation are covered as well as the properties of pigments, solvents and the principal classes of paint media. An excellent introduction to the subject for readers at this level.

669 Metallurgy

van LANCKER, M.

199

Metallurgy of aluminium alloys. Tr. by E. Bishop. C & H, 1967. xvi,488p, plates, tables, diagrs, refs, index. 140s.

C A remarkable book covering nearly all aspects of aluminium alloy production, fabrication and application. The approach is all-embracing, dealing with basic theoretical aspects, and skilfully applying them to practice. The first half of the book deals with alloy making and intermediate product manufacture. The second half covers methods of application such as machining, welding, surface treatment and corrosion. There are numerous useful tables, a bibliography and a detailed index. Highly recommended to industrialists and research workers dealing with aluminium and its alloys.

SHARP, J. D.

200

Electric steelmaking. Iliffe, [1967]. 136p, plates, tables, diagrs, index, bibliog. 37s 6d. *Modern steelmaking practice*.

B A practical, descriptive book covering both practice and equipment and of value to both the steelmaker and the student. Deals with arc furnace design, refractories, instrumentation and control. Steelmaking is also dealt with, including physical chemistry and raw materials, and induction furnaces and vacuum melting. There is a useful bibliography.

67/68 Manufactures

MACKERETH, L.

201

Woolen carding and spinning. *Wool Review*, [1966]. 142p, plates, diags, index. 20s.

B A handbook suitable for craft students and technicians. It contains a thorough discussion of practical aspects of woollen (especially carpet) yarn manufacture—the processes, the machines and technical management—and descriptions (with many illustrations) of carding machines, mules and ring spinning frames and their many adjustments.

681 Precision MechanismsBEHRNDT, K. H. *ed.*

202

Vacuum microbalance techniques, vol. 5. Proceedings of the Princeton Conference, September 27–28 1965. NY, Plenum P, 1966. xx, 264p, plates, tables, diags, refs, indexes. \$13.50.

C Sixteen papers by internationally recognized experts on recent advanced research in the field. Topics presented in this volume are pivot bearings; microbalances; substitution weighing and a negative feed-back system; application of a balance to measuring thrust; thermonuclear flow effect; thin films; theory, calibration and applications of the quartz crystal oscillator. A further substantial contribution both as an instrument reference book or graduate text. Each paper is preceded by an informative homotopic abstract and supplemented by references.

COLLINS, N. L. and MICHIE, D. *eds*

203

Machine intelligence 1. Preface by Sir Edward Collingwood. Edinburgh, London, O & B, 1967. x, 278p, tables, diags, refs, indexes. 3 *gns.*

C This volume reports the proceedings of the first Annual Machine Intelligence Workshop organized by the Experimental Programming Unit in the University of Edinburgh in September 1965. The papers report work, mostly done in British universities, on computer treatment of linear graphs and trees, mathematical proofs about computer programs, automatic theorem proving, machine learning and heuristic programming, cognitive processes and pattern recognition and problem-oriented languages and compiler-compilers.

DAVISON, J. F.

204

Programming for digital computers: using computers to advantage. 2nd ed. Business Publications, 1967. ix, 214p, diags, appendix, index. 45s.

A-B This edition has been brought up to date with extensive rewriting. It begins with an introduction to computers and to the programmer's role, but is most concerned with a lucid exposition of the principles of the incorporation in a computer of facilities which will make it a tool which can be used effectively by the programmer. An imaginary computer is used for illustration, but the properties of actual machines are not ignored. The book is in no way a textbook of programming, but it gives a good insight into the relationship between programming requirements and the design of machine facilities.

INSTRUMENT SOCIETY OF AMERICA

205

Instrumentation in the chemical and petroleum industries, vol. 2: proceedings of the chemical and petroleum instrumentation sessions held during the First Joint International Symposium on Analysis Instrumentation and Chemical and Petroleum Instrumentation, May 26–28 1965, Montreal. Ed. by C. W. Sanders. NY, Plenum P, 1966. x, 207p, plates, tables, diags, refs, index. \$10.50.

C This volume contains sixteen papers concerned with various aspects of instrumentation including safety considerations in hazardous areas, control of multicomponent fractionators, sampled and continuous process control systems with random disturbance, applications of direct digital control, electrical interlocks and control of a refinery and of an exothermic reactor. The treatment in some papers is as a review and in others as a report of a novel contribution. Some references are given. A panel discussion concerned with the maintenance of instruments is also included.

WHITWORTH D.

206

Basic digital computer concepts. Heinemann Educational Books, for International Computers and Tabulators, 1966. v, 161p, plates, diags. 25s.

A An elementary approach, designed to take the reader by easy stages from complete ignorance of computers to a familiarity with the basic notions of their use, hardware and programming methods. Questions are provided at each stage to test progress. After working through the book, the reader will not be in a position to write computer programs, but he will have some understanding of the notions involved. There is some looseness of terminology which is regrettable in a book of this nature.

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VOLUME 32 . NUMBER 5 . MAY 1967

3 SOCIAL SCIENCES

31 Statistics

BARTLETT, M. S.

207

Introduction to stochastic processes: with special reference to methods and applications. 2nd ed. CUP, 1966. xvi, 362p, tables, diags, index, bibliog. 60s.

C The revision of this well known and respected text has been achieved by the insertion of extra sections throughout the book, rather than the complete rewriting needed to take account of the great developments during the period 1955-65. Some references have been added to the bibliography and reference is made to the special bibliography published by the International Statistical Institute. Important new sections cover topics such as the theory of storage, point processes, prediction problems and the method of analysis using a frequency spectrum.

FREUND, J. E.

208

Modern elementary statistics. 3rd ed. Englewood Cliffs (NJ), Prentice-Hall, ©1967. x, 432p, tables, diags, index, bibliog. 74s. *Prentice-Hall mathematics series*.

B This new edition has been almost completely rewritten to accord with current thought and has new examples and exercises drawn from many fields of application. The first part on descriptive methods has been reduced to make room for other material; the second part on basic theory is aligned to a set-oriented and decision making approach. There is a discussion on personal probability, theory of games and simulation in connection with sampling distributions. The new emphasis upon inference based upon scarce information (data) is shown by having chapters aligned to main kinds of problems. A useful feature is the annotated set of references for wider reading at the end of each chapter: these are well chosen and not so voluminous as to discourage the student.

KOTZ, S.

209

Recent results in information theory. Methuen, [1967]. 95p, diags, refs, index. 15s hardback; 8s 6d paperback. *Supplementary review series in applied probability*.

C This paper is the fifth in the series which has original publication in the relatively new *Journal of Applied Probability*. The subject is the development of probability concepts in the field of communication systems: 'getting the message through' is not always as easy as is believed. The concepts of coding (expression in some language) the message, capacity of the channel with its 'noise' (distractions) are problems whether the system is mechanical, electrical or human; the latter being no less important. This review paper has many merits but none so helpful as its presentation of hitherto inaccessible work from Russian scientists. Information theory is a technically difficult subject but one whose broad importance is increasing so that this paper is a very welcome addition to the literature.

RACHTLIFFE, J. F.

210

Elements of mathematical statistics. 2nd ed. OUP, 1967. x, 224p, tables, diags, index. 18s. *Oxford mathematical handbooks*. Paperback.

B This edition has been enlarged by consideration of multiple regression, where the drudgery has now been removed by fast computers, and a collection of additional topics in a final chapter. While the former has been merged with the relevant chapter, the topics in the latter would have had more impact if they could have been similarly treated, but this might have upset the economics of the operations. The title of the book is a little misleading and 'Statistical methods' would be more appropriate. The book is well-motivated but would merit greater consideration if it included some help towards the further reading necessary for reasonable working competence in this expanding field.

5 MATHEMATICS AND NATURAL SCIENCES

51 Mathematics

CHRESTENSON, H. E.

211

Mappings of the plane: with applications to trigonometry and complex

numbers. San Francisco, London, Freeman, [1967]. vi, 171p, diagrs, index. 18s. Paperback.

B This book develops the notions of rigid motions and similarity mappings of the plane, and uses them to obtain trigonometrical identities and to define operations in complex numbers. The treatment is not rigorous, but introduces important concepts which are not usually encountered at this level. It is aimed at people with a minimal background in geometry and algebra, but will serve as additional reading in a more rigorous linear algebra course. Topics dealt with are: mappings of line and plane, rigid motions and similarities of plane, trigonometry, plane as a number system and complex numbers. Exercises are provided.

ERUGIN, N. P.

212

Linear systems of ordinary differential equations: with periodic and quasi-periodic coefficients. Tr. by Scripta Technica, ed. by R. Bellman. NY, London, Academic P, 1966. xxi, 271p, tables, index, bibliog. 96s. *Mathematics in science and engineering*, vol. 28.

B A good account with the emphasis on work first published in the USSR, such as Lappo-Danilevskii's applications of matrix theory and the fundamental methods due to Liapunov. Many special equations of technological importance are studied in detail, with references to recent Russian literature. The reader should possess a firm grounding in matrix algebra.

TULLER, A.

213

Modern introduction to geometries. London, NY, [etc], Van Nostrand, ©1967. xiii, 201p, diagrs, refs, appendix, index, bibliog. 60s. *University series in undergraduate mathematics*.

B This book bridges the gap between school and university geometry. In the first section, a geometry is a logical axiomatic structure; non-Euclidean geometries show the dependence on axiom systems, and the real projective plane is equipped with co-ordinates. In the second part, geometry is the invariant theory of a transformation group, and analytic and synthetic methods provide geometric properties. Finally, a return is made to the non-Euclidean models of Klein and Poincaré. A specialist at sixth-form level could read the book with profit.

TUTTE, W. T.

214

Connectivity in graphs. Toronto, TUP; London, OUP, [1967]. ix, 145p, diagrs, index, bibliog. 2 gns. *Mathematical expositions* no. 15.

C In the modern abstract theory, much of it the work of Whitney in 1931-35, a graph is a set of 'vertices' and a set of 'edges', each edge associated with two vertices, its ends. Professor Tutte has not attempted a comprehensive treatise, but has expounded certain aspects in detail, including his own researches. The young research worker will find this book a valuable guide and stimulus.

52 Astronomy. Surveying. Geodesy

ROZENBERG, G. V.

215

Twilight: a study in atmospheric optics. Tr. from the Russian by R. B. Rodman. Preface by J. V. Dave. NY, Plenum P, 1966. x, 358p, tables, diagrs, refs, appendix, indexes. \$20.00.

C A very comprehensive review of present knowledge of the illumination of the sky as functions of wavelength, direction and solar elevation. Much original work is presented for the first time. Much data are presented on the composition and optical properties of atmosphere and scattering properties of aerosols. The inference of atmospheric properties from observations of twilight intensity and polarization is also included. Excellent translation.

53 Physics

INTERNATIONAL ATOMIC ENERGY AGENCY

216

Plasma physics and controlled nuclear fusion research: proceedings of a conference on . . . held by the International Atomic Energy Agency at Culham 6-10 September 1965; vols I and II. Vienna, the Agency [distrib. by HMSO], 1966. 778p; 1000p, plates, tables, diagrs, refs, indexes. 90s; 6 gns.

C A record of the state of plasma physics mainly as applying to nuclear fusion at September 1965. The papers record basic experimental and theoretical work as well as including progress reports of work on the major thermonuclear machines. There are original contributions on plasma production, confinement, stability and heating.

PAO, R. H. F.

217

Fluid dynamics. Columbus (Ohio), Merrill Books [distrib. by Prentice-Hall], ©1967. xiii,497p, tables, diagrs, refs, appendix, indexes. 90s.

- + B This is a good clear introduction to the concepts and basic principles of flow in continuous media for the degree student. Vector and tensor notation and manipulations are carefully explained as they first appear in the text, and with the many illustrative examples and problems, this book must be of considerable value to any student of the subject.

537 Electricity

MCKELVEY, J. P.

218

Solid state and semiconductor physics. NY, Evanston, London, Harper & Row, [1967]. xii,512p, tables, diagrs, refs, appendixes, indexes. 56s. *Harper's physics series*.

- B Although much of the content of this book appears in earlier texts, the choice of several topics in solid state physics is well adapted to the needs of later chapters on the behaviour of charge carriers in semiconductors and devices. A useful general coverage for senior undergraduates notable for readable sections on statistical mechanics and wave mechanics and for unusually detailed accounts of the effective mass tensor and the Hall effect in semiconductors. The physics of a range of junction devices is discussed in detail, and exercises and references for further reading accompany each chapter.

539.1 Nuclear Physics

CHRÉTIEN, M. and DESER, S. eds

219

Brandeis University Summer Institute in Theoretical Physics, 1965; vol. 1, axiomatic field theory; vol. 2, particle symmetries. NY, London, Paris, Gordon & Breach, 1966. xi,516p; xi,691p, tables, diagrs, refs, appendixes, bibliog. \$32.50; \$35.00.

- C The first volume is an excellent survey of advanced parts of quantum theory of fields and particles. Much of it is in print for the first time. The lectures contained in the second volume were delivered shortly after the discovery of SU(6) and C-violation, and they provide a useful review of the status of symmetry groups in particle physics. Topics covered by the four main lectures include SU(3) and its application to weak interactions, bootstrap dynamics as a possible origin of symmetries, SU(6) and its relativistic generalizations and the experimental status of P, C and T, while shorter seminars deal with a theory of C-violation and the meson resonance spectrum. Related lectures by L. Michel of a more mathematical nature are included in volume 1.

HERZBERG, G.

220

Molecular spectra and molecular structure; III, electronic spectra and electronic structure of polyatomic molecules. NY, London, [etc], Van Nostrand, [1967]. xviii,745p, plates, tables, diagrs, appendixes, indexes, bibliog. 160s.

- C This third volume is of the same very high standard as the well known previous works. It emphasizes the recent rapid development in the study of the visible and ultra-violet spectra of simple stable molecules and free radicals in the gaseous state. Such a wealth of information under one cover must make this a standard reference for advanced postgraduate students.

MANENKOV, A. A. and ORBACH, R. eds

221

Spin-lattice relaxation in ionic solids. NY, Evanston, London, Harper & Row, [1967]. xvii,453p, tables, diagrs, refs. 40s. *Harper's physics series*. Paperback.

- C A well chosen collection of reprints of original papers (1932-65) on spin-lattice relaxation in ionic solids containing paramagnetic ions. The editors have provided an introduction but no commentary.

54 Chemistry

BARD, A. J.

222

Chemical equilibrium. NY, Evanston, London, Harper & Row, [1967]. xi,202p, tables, diagrs, appendixes, index. 25s. *Harper's chemistry series*.

- B This is a sound, indeed in places outstanding, introduction to the theoretical treatment of equilibria, which contributes much to an understanding of chemistry and will be welcomed in undergraduate courses of physical and analytical chemistry. Although the treatment is fairly rigorous, the mathematics is kept simple.

EITEL, W.

223

Silicate science; vol. III, dry silicate systems; vol. IV, hydrothermal silicate systems; vol. V, ceramics and hydraulic binders. NY, London, Academic P, 1966. xiv,553p; xiv,617p; xiv,618p, tables, diagrs, indexes. 176s; 192s; 192s. [Vols I and II revd August 1965 no. 401.]

C Volume III covers 1953-63, and reviews recent advances in the knowledge of silica itself and the melting relations of numerous binary, ternary and higher silicate systems in the absence of water. Volume IV covers 1952-62. Systems at high temperature containing water are at high pressure and techniques developed by Barrer, Bowen, Osborne and Roy are described, together with numerous pressure-temperature stability diagrams of systems containing silica, a volatile oxide—usually water—and other oxides of the commoner elements. The behaviour of the zeolites concludes this volume. Volume V deals with reactions in the solid state with appropriate descriptions of tracer, DTA and other techniques in systems including silica. The greater part of this volume is concerned with cement chemistry. The bonding of refractories is also covered in the usual accurate and well-documented way. These volumes supplement the author's *Physical chemistry of the silicates*, Chicago Press, 1954.

GUTSCHE, C. D.

224

Chemistry of carbonyl compounds. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xiv,141p, tables, diagrs, refs, index. 44s cloth; 20s paperback. *Prentice-Hall foundations of modern organic chemistry series*.

B This volume in a series aiming to meet the requirements at the first year undergraduate level can be recommended. The author is an expert whose treatment is lucid and straightforward. The first chapter deals with the structure and properties of carbonyl compounds, and in the remaining five chapters numerous reactions are described and discussed according to their type. The balance between theory and factual matter is good.

LITTLEWOOD, A. B. *ed.*

225

Gas chromatography 1966: proceedings of the Sixth International Symposium on Gas Chromatography and Associated Techniques organized by the Gas Chromatography Discussion Group of the Institute of Petroleum, Rome, 20-23 September 1966. Institute of Petroleum, 1967. xii,464p, plates, tables, diagrs, refs, indexes. 100s.

C The twenty-four papers which are presented, together with the subsequent discussion and the often substantial documentation, make this a useful collection for those requiring up-to-date information on techniques and applications. The advance continues to be rapid—the specialized detector systems which include the high resolution mass spectrometer, and the use of computers and evaluation of the results, are examples. The number of specialized applications both in research and process control increases. There are several papers on the use of the technique in the study of chemical equilibria and of hydrogen-bond energies.

TOROPOV, N. A. *and* BARZAKOVSKII, V. P.

226

High-temperature chemistry of silicates and other oxide systems. Tr. from Russian by C. N. Turton and T. I. Turton. NY, Consultants Bureau, 1966. xi,216p, plates, tables, diagrs, bibliog. \$25.00. Paperback.

C Thermodynamic properties (melting relations—especially of variable valency oxides—and EMF of solid electrolyte cells), diffusional processes in the solid state and evaporation from oxides of the commoner elements form the basis of this scholarly and well-referenced series of review-style chapters by two eminent authors. Glass-ceramics (sitalls in Russia) and 'whiskers' are also dealt with.

55 Geology. Meteorology

GROEN, P.

227

Waters of the sea. London, Toronto, [etc], Van Nostrand, ©1967. xiv,328p, illus, plates, tables, diagrs, index, bibliog. 65s.

A-B A careful, comprehensive, treatment of the nature, causes and effects of all kinds of water movements in the ocean—waves, long waves, surges, tides, currents and the general circulation of water. It is recommended to all who wish to learn about the sea. It is not too difficult for general readers who understand some elementary science, and it will please more advanced students. It shows where further information can be obtained.

57 Anthropological and Biological SciencesDAWES, B. *ed.*

228

Advances in parasitology, vol. 4. London, NY, Academic P, 1966. xvi, 408p, plates, tables, diagrs, refs, indexes. 100s. [Vol. 3 revd April 1966 no. 180.]

C Six excellent reviews. R. A. Neal assesses morphological, physiological and serological characteristics of *Entamoeba* (Protozoa). Y. Komiya describes *Clonorchis* (Digenea) and clonorchiasis. K. Rybicka reviews embryogenesis in cestodes and D. L. Lee discusses the structure of helminth cuticle. D. S. Bertram treats the relationship of *Litomosoides* (Nematoda) with its host and D. Poynter deals with tissue reactions to nematode infestations.

GANI, J.

229

Stochastic models for bacteriophage. Methuen, [1967]. 46p, tables, diagrs, refs, index. 15s hardback; 8s 6d paperback. *Supplementary review series in applied probability.*

C Competent review papers are scarce in any field and they have a value beyond the readers of the journal of original publication. The series from *Journal of Applied Probability*, of which this item is the fourth, is to be commended. This paper is by the editor and covers the field of quantitative biology to which he has made a considerable contribution. The application of dynamic probability models to the study of bacteriophage is relatively new, but hope is expressed that co-operative development between statisticians and virologists will promote substantial advances in the understanding of virus behaviour. The increasing revelation of the importance of RNA and DNA to life makes this publication of prime value to those working in that field.

HARE, R.

230

Outline of bacteriology and immunity. 3rd ed. Longmans, 1967. xii, 472p, plates, tables, diagrs, index. 50s.

B First published in 1956, this excellent textbook has now gone into its third edition only three years after the second. Consequently there has been no extensive revision. The viruses are now given nine separate chapters, including one on the oncogenic viruses not dealt with in previous editions. The rest of the text has been updated to include, for example, descriptions of the newer antiseptics and the new semi-synthetic antibiotics.

PRESCOTT, D. M. *ed.*

231

Methods in cell physiology, vol. II. NY, London, Academic P, 1966. xvi, 426p, plates, tables, diagrs, refs, indexes. 140s. [Vol. 1 revd November 1964 no. 618.]

C This volume, like its predecessor, is an account by recognized authorities of recently evolved procedures and techniques which are proving valuable in research on cell physiology. Several chapters are devoted to the handling of nuclei and chromosomes, with useful accounts of micurgical methods. Three chapters deal with autoradiography and two with culture methods for specific organisms (*Euglena gracilis*) and groups (cellular slime moulds).

WILLMER, E. N. *ed.*

232

Cells and tissues in culture: methods, biology and physiology; vol. 3. London, NY, Academic P, 1966. xvi, 826p, plates, tables, diagrs, refs, indexes. 9 gns.

C The eleven chapters of this final volume of the series are by recognized authorities on tissue culture, and form a valuable supplement to the two earlier volumes. The first six chapters deal with the application of tissue culture methods to various fields of research, including radiobiology, virology, antibody production and pharmacology. A chapter on tissue culture of invertebrates follows and the volume ends with four chapters on plant tissue culture.

577.1 BiochemistryCAMERON, I. L. and PADILLA, G. M. *eds*

233

Cell synchrony: studies in biosynthetic regulation. NY, London, Academic P, 1966. xv, 392p, plates, tables, diagrs, refs, indexes. 120s.

C Separate chapters by authoritative workers on the general theory and methods; chromosome cycles, nucleic acids, proteins and enzyme synthesis, or energetics in *E. coli*, *B. subtilis*, yeast; myxomycetes, root cells, *Chlorella*, *Astasia*, *Tetrahymena*; HeLa cells; *Tetrahymena* and sea-urchins (sulphydryl groups), Diatoms (silica), *Euglena* (chloroplasts and DNA).

58 Botany

de WIT, H. C. D. 234

Plants of the world; I, the higher plants. Thames & Hudson, [1967]. 335p, plates, illus, index. 4 gns.

A No book in recent years will appeal so readily to those with a general interest in botany. The author is a professional botanist of established repute and he has produced a most readable account of the flowering plants which clearly has lost none of its impact by translation from the original Dutch. It has truly outstanding illustrations, particularly those in colour, which distinguish this book from any contemporary one of its kind.

INTERNATIONAL ATOMIC ENERGY AGENCY 235

Isotopes and radiation in plant pathology. Vienna, the Agency [distrib. by HMSO], 1966. 94p, refs. 17s 8d. *Technical reports series*. Paperback.

C A collection of papers concerned with past and future uses of the techniques to study spread of pathogens, to develop disease resistant mutants, to follow metabolic changes in diseased plants and to study uptake and action of pesticides.

YOUNG, E. G. and MCLACHLAN, J. L. eds 236

Proceedings of the Fifth International Seaweed Symposium, Halifax, August 25-28 1965. London, NY, [etc], Pergamon P, 1966. xviii, 424p, plates, tables, diags, refs, indexes. 100s. [Fourth symposium was revd August 1964 no. 442.]

C Special lectures on polysaccharides of agarophytes, alginate gels, ecology of New Zealand seaweeds and a survey of the future of the seaweed industry. There are fifty-two other papers on biology (miscellaneous), chemistry (mainly polysaccharides) and other macromolecular constituents of red and brown algae, and applications (manures, vitamins, clinical uses, etc.)

59 Zoology

SUDD, J. H. 237

Introduction to the behaviour of ants. Arnold, 1967. viii, 200p, plates, diags, refs, index. 40s; 20s paperback.

B The author's intention, well realized, is to produce an introduction to behaviour from the point of view of its variety rather than its causes. It is consciously based on the literature, much of it untranslated German, in order to provide informed guides for the reader. There are about five hundred references at the end of the book.

TWITTY, V. C. 238

Of scientists and salamanders. San Francisco, London, Freeman, [1967]. ix, 178p, plates, diags, refs, index. 36s.

A-B This account of the research career of a distinguished biologist is of interest not only to workers in the field of embryology, but also to the intelligent non-scientist, as it conveys an impression of what research entails, and its rewards and disappointments. Clearly and delightfully written, this book contains much hard information on both salamanders and scientists.

6 APPLIED SCIENCES**615 Pharmacy**

GARATTINI, S. and SHORE, P. A. eds 239

Advances in pharmacology, vol. 4. NY, London, Academic P, 1966. viii, 390p, plates, tables, diags, refs, indexes. \$16.00. [Vol. 2 revd February 1964 no. 90.]

C This volume has five reviews which are extensive and complete, but there are few references to work published after 1964. The reviews are, 'Hypotensive peptides' by E. G. Erdös, 'Uricosuric drugs' by A. B. Gutman, 'Synthetic anti-inflammatory drugs' by R. Domenjoz, 'Drug oxidation and reduction by enzymes' by J. R. Gillette and 'Experimental and clinical chemoteratogenesis' by R. L. Cahen.

621 Mechanical and Electrical Engineering

CHOU, P. C. and PAGANO, N. J. 240

Elasticity: tensor, dyadic, and engineering approaches. London, Toronto, [etc], Van Nostrand, ©1967. xvi, 290p, tables, diags, refs, index. 70s. *University series in basic engineering*.

D A textbook for advanced undergraduates and postgraduates, dealing with engineering, tensor and dyadic approaches to elasticity theory. The chapters deal mostly with the basic theory, and applications of the theory are given in the form of problems at the end of each chapter. This textbook should prove useful to advanced engineering students and those studying material properties at postgraduate level.

HAGERTY, W. W. and PLASS, H. J. Jr 241
Engineering mechanics. London, Toronto, [etc], Van Nostrand, ©1967.
x,662p, tables, diags, appendixes, index. 102s. *University series in basic engineering*.

B A first and second year undergraduate textbook on statics and dynamics, with an emphasis on dynamics. The text covers the first year studies well, and some second year studies, and includes over seven hundred problems for solution by the reader. A well-written and readable text.

KEMPÉ'S ENGINEERS YEAR-BOOK for 1967. Two vols. Ed. by C. E. Prockter and B. W. Pendred. 72nd ed. Morgan Bros, 1967. 1358p; 1393p, plates, tables, diags, refs, index. 100s. 242

D This edition has been revised to include information on new topics such as the Concorde, and to cover new regulations or standards where these have been issued. Six sections have been rewritten. This remains the best single reference work in its field.

621.039 *Nuclear Engineering*

GOODJOHN, A. J. and POMRANING, G. C. eds 243
Reactor physics in the resonance and thermal regions; vol. I, neutron thermalization; vol. II, resonance absorption. Proceedings of The National Topical Meeting of the American Nuclear Society, San Diego, February 7-9 1966. Cambridge (Mass.), London, MITP, ©1966. x,421p; xi,452p, tables, diags, refs, indexes. \$7.50 each.

C These proceedings bring together papers which summarize well the present 'state of the art' in the field of thermal and resonance reactor physics. Such conference proceedings are valuable to those in universities and industry working in the field of nuclear engineering.

ROTHCHILD, S. ed. 244
Advances in tracer methodology, vol. 3. A collection of papers presented at the Ninth and Tenth Symposia on Tracer Methodology. NY, Plenum P for New England Nuclear Corporation, 1966. x,333p, plates, tables, diags, refs, index. \$12.50.

C This volume contains thirty-three papers presented at the Ninth Symposium (San Francisco, October 1964) and at the Tenth Symposium (Zurich, March 1965). The papers deal mainly with the application of radioactive tracers in biochemistry, pharmacology, endocrinology and medicine reporting.

621.3 *Electrical Engineering*

GOEDECKE, W. 245
Dictionary of electrical engineering, telecommunications and electronics; vol. II, French-English-German. London, Pitman; Wiesbaden, Brandstetter Verlag, [1967]. 1009p. 95s.

D Basically a rearrangement of the 1964 volume (German-English-French) with one thousand additional terms, bringing the total to twenty-seven thousand. Selection is based on journals and recent textbooks. Alternative meanings are given, but not explained.

OWEN, G. E. and KEATON, P. W. 246
Fundamentals of electronics, vol. I. NY, Evanston, London, Harper & Row, [1967]. xii,337p, tables, diags, appendixes, index. 3 gns. *Harper's physics series*.

B A development of the mathematical techniques needed in the field of linear electronic circuits. A very full account is given of the use of matrix analysis and the methods of operational calculus, and their application to passive circuits. The treatment, although sophisticated and mathematically rigorous, is clearly presented in its relation to the subject, and is well illustrated by excellent diagrams.



- PANNETT, W. E. 247
Dictionary of radio and television. Newnes, 1967. 373p, diags, appendix. 36s.

D A very complete dictionary of radio and television (and electronics) which should serve a very wide range of technicians, engineers and students. It will also be of value to research workers using electronic techniques.

- TOWERS, T. D. 248
Electronic laboratory instrument practice. Iliffe, 1967. 8,164p, plates, diags, index. 35s. *Wireless World book*.

B A well written account of the vast range of electronic laboratory equipment available at present. The book will be valuable to those who already have a technical training but who lack practical experience in the electronics laboratory.

- WATSON, J. 249
Semiconductor circuit design for a.f. and d.c. amplification and switching. Hilger & Watts, ©1966. xiv,318p, tables, diags, refs, appendixes, index. 4 gns.

B This book will be of value to both undergraduates and practising engineers. The emphasis is on design, and analysis is given in sufficient detail to enable practical circuits to be realized. By restricting himself to a.f. and d.c. amplification and switching, the author has given a fuller treatment than is often found in books of this class. A useful addition is a chapter on photoelectric devices.

- WHITE, D. H. 250
Elementary electronics. NY, Evanston, London, Harper & Row, [1967]. ix,172p, tables, diags, index. 30s. *Harper's physics series*.

B An introduction to electronics in a humane manner with a detectable trace of humour. Previous knowledge of elementary calculus, electricity and magnetism is assumed. The text begins with first principles and proceeds to a level of reasonable skill in practical circuit and device design. The aim is not to present a rigorous treatment, but to give potential users some insight into working principles.

624 Structural Engineering

- ZBIROHOWSKI-KOŚCIA, K. 251

Thin walled beams: from theory to practice. Crosby Lockwood, ©1967. x,100p, diags, appendixes, index, bibliog. 35s.

C The complex combined effects of direct, bending and torsional loads are examined and worked examples are given. Some approximations involving warping are made for convenience of treatment based on Vlasov's theory involving bimoments. It is not always clear whether new concepts are being presented or established practice under new names. The author avoids initial complications by referring readers to appendixes or to other books for proofs. The book could suggest new approaches.

625 Railway and Highway Engineering

- ROBERTS, P. O. and SUHRBIER, J. H. 252

Highway location analysis: an example problem. Cambridge (Mass), London, MITP, ©1966. x,94p, plates, tables, diags. \$5.00. *MIT report no. 5*. Paperback.

C An account of how some recently developed analytical techniques were applied in a series of evaluation studies of alternative locations for a seven-mile length of a proposed 'inter-state' highway. These alternatives had been defined in a general way within a 'broad band of interest' of relatively undeveloped country. The techniques included automatic recording of terrain data from topographical maps and the extensive use of computer programmes for the calculation of geometric data, earthwork quantities, capital costs and vehicle operating costs. Despite the limitation of the methods and the inconclusiveness of the results, this research work will be of great interest to highway engineers.

63 Agriculture. Forestry. Livestock. Fisheries

- BEIRNE, B. P. 253

Pest management. Leonard Hill, 1967. 123p, index. 30s.

A-B A useful condensed text covering the whole field of man's relationships with agricultural and other pests. It provides a balanced analysis suitable for general reading of the controversial chemical pesticides and biological control problem. Technical terms and advanced chemical and biological concepts have been avoided or reduced to their simplest forms.

65 Business Techniques. ManagementHOLLINGDALE, S. H. *ed.*

254

Digital simulation in operational research: a conference under the aegis of the Scientific Affairs Division of NATO, Hamburg, 6-10th September 1965. EUP, 1967. 392p, tables, diagrs, refs. 75s. Paperback.

C These proceedings contain the introductory lecture, the three survey lectures and the thirty-seven papers read at the conference. They cover a wide field from technical matters of random number generation and program structure to practical case studies in industry and defence. Many are at the frontiers of current knowledge of the subject.

66 Chemical Technology

BENNION, E. B.

255

Breadmaking: its principles and practice. 4th ed. London, NY, Toronto, OUP, 1967. vii, 391p, plates, tables, diagrs, index, bibliog. 3 *gns.*

B This book can be recommended as a comprehensive study of the subject. The text is clearer than in the previous edition, and the latest techniques and equipment are included; for example, there is a chapter on deep-freezing and dough retardation. It is a pity no centigrade equivalents are given.

67/68 Manufactures

GARNER, W.

256

Textile laboratory manual; vol. 3, detergents; vol. 4, dyestuffs. 3rd ed. London, Heywood Books; NY, American Elsevier, 1967. 12, 210p; 13, 165p, tables, diagrs, refs, indexes. 45s; 37s 6d. [Vols 1 and 2 revd March 1967 no. 151.]

B-C Volume 3 gives information about detergents and wetting agents, oils and fats, chemicals (metals, acids, alkalis, oxidizing and reducing agents, etc.), and water supplies and effluents in relation to textile processing, and particularly about methods of testing and analysis. Volume 4 deals with dyes, dyeing, fastness testing, and identification. Qualitative reagents and tests, detailed in volume 1, are cross-referenced by number. Collectively, a useful compilation.

681 Precision MechanismsALT, F. L. and RUBINOFF, M. *eds*

257

Advances in computers, vol. 7. NY, London, Academic P, 1966. xiii, 303p, illus, plates, tables, diagrs, refs, indexes, bibliog. 112s. [Vol. 6 revd July 1966 no. 345.]

B-C Contains papers on 'Highly parallel information processing systems' by J. C. Murtha, 'Programming language processors' by R. M. Davis, a theoretical treatment, 'Computers in newspaper editing' by W. A. Danielson, and 'Typesetting' by W. R. Boxmon, 'Programming languages for computational linguistics' by A. C. Satterthwait, and 'Computer-driven graphic displays' by A. van Dam.

69 Building Industry

INSTITUTE OF WOOD SCIENCE

258

Hardwoods today: papers presented at a conference organized by the Midland Branch of the Institute at the Shropshire Adult College, November 1966. The Institute, [1967]. 48p, tables. 10s. Paperback.

C The UK hardwood trade is considered from the point of view of the shipper, importer, architect, builder and manufacturer, and the need for closer co-operation between supplier and customer is stressed. Measures leading to reduction in waste are needed to improve efficiency. Research can play an important part in promoting better utilization of hardwoods.

7 THE ARTS**77 Photography**

DUFFIN, G. F.

259

Photographic emulsion chemistry, London, NY, Focal P, ©1966. 239p, plates, tables, diagrs, refs, indexes. 5 *gns.* *Focal library.*

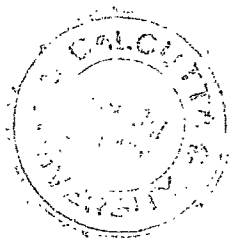
B Although it contains some minor blemishes due to careless writing and proof-reading, this book can be recommended for the purpose for which it was intended, namely as a textbook for City and Guilds and IIP final students, and those reading for a Dip.Tech. It stresses theory rather than practice and deals with the basic chemistry of the manufacture and properties of photographic emulsions and their components. Colour processes and non-conventional systems are included.



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0 SCIENCE AND KNOWLEDGE

007 *Information. Communication. Control Theory*

KLÍR, J. and VALACH, M.

260

Cybernetic modelling. Tr. by P. Dolan, ed. by W. A. Ainsworth. London, Iliffe; Prague, SNTL, 1967. 437p, tables, diagrs, refs, index. 3 gns.

B-C The principal purpose of this book is to show the part played by cybernetic modelling in the solution of problems common to the animate and inanimate world. Cybernetics is here taken as the study of the informational relations between a system or complex and its environment. The first part of the book deals with the principles of modelling, that is using one system to represent another. The second part briefly outlines those areas of biology (chiefly neurology) which are of interest from the cybernetic viewpoint: this is chiefly for the benefit of engineers rather than biologists. The third part applies the principles evolved to various topics such as communication, perception and complex inanimate systems. The bibliography is excellent.

3 SOCIAL SCIENCES

31 Statistics

RAHMAN, N. A.

261

Exercises in probability and statistics; for mathematics undergraduates. Griffin, 1967. xi, 307p. 65s.

B This new collection of over four hundred exercises has been tested over a period of years. It covers a basic course requirement and much remains to learn thereafter: the four chapters deal with discrete probability and random variables, continuous random variables, inference including regression and correlation, and characteristic functions. The third chapter covers point estimation, sampling distributions and tests of significance, but omits interval estimation and power functions as being beyond a first course. The merits of this book lie in the problem-orientation of the exercises, answers and limits on solution which occupy more than half of the pages. This set of exercises is of prime interest to teachers and can be commended to students.

33 Economics

CHRIST, C. F.

262

Econometric models and methods. NY, London, Sydney, Wiley, [1967]. xxiii, 705p, tables, diagrs, refs, index. 115s.

C This book, together with *Statistical methods of econometrics* by Malinvaud, and books by Theil, mark a new generation of excellence in basic textbooks for the study of econometrics, that hinterland of economics, mathematics, statistics and accounting which endeavours to place numerical verification on the hypotheses and principles of economic theory. Any serious student will need this book and the increasing attention given to econometric model building and verification by individual firms, industries and government organizations will be rewarded by a detailed study of its chapters. The three parts of the book deal respectively with introductory material (two chapters), theoretical econometric models (four chapters) and empirical methods in econometrics (five chapters). An important foreword on econometric tools is contributed by Marschak, a pioneer in this field, and the preface is most helpful in creating the right approach. The author is one of the leading members of a still relatively small group of workers in a difficult but critically important field. His teaching experience in America and elsewhere is evident in the organization and drafting of this complicated subject and his earlier research experience evident in the scholarly approach to the difficult technical problems that arise.

SHUBIK, M. ed.

263

Essays in mathematical economics: in honor of Oskar Morgenstern. Princeton (NJ), PUP; London, OUP, 1967. xx, 475p, frontispiece, tables, diagrs, refs, bibliog. 100s.

C The twenty-seven contributions in this volume are divided into seven sections each devoted to an aspect of mathematical economics wherein Oskar Morgenstern pioneered or made significant contributions: game theory (6 papers), mathematical programming (3 papers), decision theory (4 papers), economic theory (5 papers), management science (2 papers), international trade (2 papers), and econometrics (5 papers). The distinguished contributors

are world wide in terms of residence and reputation, and the book is commended to all those who have to grapple with econometric and associated problems.

5 MATHEMATICS AND NATURAL SCIENCES

AMERICAN CHEMICAL SOCIETY

264

Werner centennial: a symposium co-sponsored by the Division of Inorganic Chemistry and the Division of the History of Chemistry at the 152nd Meeting of the Society, New York, September 1966. Washington (DC), the Society, 1967. ix, 661p, plates, tables, diags, refs, index. \$15.00. *Advances in chemistry series*, 62.

C The symposium, of which this is the proceedings, was held to celebrate the centenary of the birth of Alfred Werner, the founder of co-ordination chemistry. It contains forty-two papers by different authors. Several of these are devoted to Werner's life and work, others outline the subsequent development of co-ordination chemistry, and the remainder summarize our present knowledge in the special branches of the subject. The whole volume forms a valuable conspectus of the history and present status of co-ordination chemistry, or ligand chemistry, as it is now often called.

51 Mathematics

BING, R. H. and BEAN, R. J. eds

265

Topology seminar, Wisconsin, 1965. Princeton (NJ), PUP; London, OUP, [1967]. 246p, diags, refs. 40s. *Annals of mathematics studies*. Paperback.

C Seminar papers which fall into four main sections—3-manifolds, the Poincaré conjecture, point-set material, and N-manifolds. Most of the papers have been expanded from the original presentation to provide expository articles on present-day problems, but the book remains one for the specialist.

GOFFMAN, C.

266

Introduction to real analysis. NY, Evanston, London, Harper & Row, ©1966. xi, 160p, index. 35s. *Harper's series in modern mathematics*.

B Real numbers, convergence, limits, continuity and differentiability, the Riemann and Riemann-Stieltjes integrals, Fourier series, make up an articulated skeleton, with closely-woven logical proofs. Much of the usual textbook material is contained in the exercises. Techniques of elementary calculus are assumed. The book would suit a fairly sophisticated first year honours degree student, or a bright sixth-former.

HAYMAN, W. K.

267

Research problems in function theory. Athlone P, 1967. vii, 56p, bibliog. 12s 6d. Paperback.

C Professor Hayman has collected from the best sources about 150 unsolved problems in the theory of functions of a complex variable, many having been mentioned at the conference at Imperial College in 1964. They mainly concern size, whether of orders of magnitude or best possible constants. The young research worker will be grateful for such a choice of problems, some of which look very difficult.

LAWDEN, D. F.

268

Introduction to tensor calculus and relativity. 2nd ed. Methuen, 1967. xii, 186p, diags, index, bibliog. 25s; 15s paperback. *Methuen's monographs on physical subjects*.

B A compact and authentic account of the elements of tensor analysis with chapters on special and general relativity. Numerous examples and problems are given which make the book very suitable for students.

MARKUSHEVICH, A. I.

269

Remarkable sine functions. Tr. by Scripta Technica, ed. by L. Ehrenpreis. NY, American Elsevier, 1966. x, 100p, tables, diags, index. 55s.

B The circular, hyperbolic and lemniscate sine functions are first geometrically related to the appropriate curves and then defined for complex arguments by the inversion of the appropriate integrals; the Jacobian function is then added. Addition theorems and periodicity are studied. A pleasant entry into elliptic function theory, the book could be read by a bright sixth-former or a first-year undergraduate.

MONJALLON, A.

270

Introduction to modern mathematics. Tr. by P. Fantham. Edinburgh, London, O & B; NY, Interscience, 1967. xiii, 226p, tables, diagrs, index. 17s 6d hard; 13s 6d paperback. *University mathematical texts*.

B The author deals with topics forming the base of modern pure mathematics—sets, relations, functions, logic and axiomatics, in a simple but rigorous fashion. To illustrate the structure of a mathematical system, the elementary theory of the commutative group is developed. The book would help sixth-formers, first year undergraduates and the teacher who is trying to cope with the new school syllabuses.

NIVEN, I.

271

Calculus: an introductory approach. 2nd ed. London, NY, [etc], Van Nostrand, [1967]. viii, 202p, tables, diagrs, appendix, index. 46s 6d. *University series in undergraduate mathematics*.

B An introductory text, requiring a prior knowledge of basic algebra and trigonometry. The approach puts more emphasis on applications than on the theory, and for this reason the book will probably be more suitable to students who will not be required to extend their knowledge of the subject. This edition has been expanded, particularly with respect to the number of problems.

PETROVSKII, I. G.

272

Partial differential equations. Tr. by Scripta Technica. Iliffe, 1967. 7, 410p, diagrs, index. 50s.

C A rigorous exposition of the theory of partial differential equations, dealing mainly with the types of equation which are of importance in mathematical physics. Primarily a book for mathematicians, rather than physicists and engineers.

52 Astronomy. Surveying. Geodesy

MOTZ, L. and DUVEEN, A.

273

Essentials of astronomy. London, Glasgow, Blackie, 1966. viii, 711p, plates, tables, diagrs, appendixes, indexes, bibliog. 70s.

B This is an expanded version of an excellent annual introductory course in astronomy given at Columbia University, New York. Emphasis is laid on the fundamental physical principles required for the study of astrophysics and astronomy. There is little advanced mathematics. The four parts are on the solar system, stellar properties and the structure of stars, stellar systems, galaxies and cosmology.

SMITH-ROSE, R. L. ed.

274

Space research VII: proceedings of the Seventh International Space Science Symposium, Vienna, 10–18 May 1966; sponsored by Committee on Space Research, International Union of Geodesy and Geophysics, and International Scientific Radio Union. Vol. 1 edited in co-operation with S. A. Bowhill and J. W. King; vol. 2, J. W. King. Amsterdam, North-Holland, 1967. xviii, 673p; xiv, [806p], plates, tables, diagrs, refs, index. 360s.

C There are approximately 200 papers in these two volumes, covering all the proceedings of the 1966 Space Science Symposium with the exception of those papers dealing with the life sciences and the sessions of the 'moon and planets' section. The papers in Vol. 1 come under three headings: interactions between the neutral and ionized parts of the atmosphere, the ionosphere and airglow, and magnetosphere and aurora. Vol. 2 covers tracking, telemetry and dynamics of satellites, polar cap experiments, troposphere and stratosphere, mesosphere, thermosphere and exosphere, X-ray, ultraviolet and cosmic radiations and real time transmission. The whole is a most valuable account of recent advances in exploring the earth's atmosphere and the physical properties of outer space.

53 Physics

ADAM, H. ed.

275

1965 transactions of the Third International Vacuum Congress, 28 June–2 July 1965, Stuttgart, Germany. Vol. 2, part I, sessions 1–4; vol. 2, part II, sessions 5–8; vol. 2, part III, sessions 9–13. NY, London, [etc], Pergamon P, 1967. xi, 290p; ix, [264p], viii, [222p], plates, tables, diagrs, refs. 140s; 140s; 120s. [Vol. 1 revd September 1966 no. 411.]

C An excellent collection of representative work, both experimental and theoretical, from laboratories in many countries. The papers cover evaporation and properties of thin films;

gas flow and kinetics; vacuum components, pumps, measurement, leak detection, systems and procedures; adsorption and desorption of gases on surfaces; cryogenics; sputtering and gettering; vacuum metallurgy; space simulation.

- GOUSE, S. W. *Jr* 276
 Index to the two-phase gas-liquid flow literature. Cambridge (Mass.), London, MITP, ©1966. viii, 867p, appendixes, indexes, bibliog. \$15.000. *MIT report no. 9*. Paperback.

D The main text of this volume was originally published in three separate parts between 1963 and 1966. These are now reprinted with the addition of a section on the most frequently cited literature in this field. There are over five thousand carefully verified references covering the literature of such topics as boiling, bubbles, closed loops, compressible flow phenomena, flow oscillation, two-phase flow, void fractions, etc.

- HINDMARSH, W. R. *ed. and others* 277
 Magnetism and the cosmos. NATO Advanced Study Institute on Planetary and Stellar Magnetism in the department of physics and mathematics, University Newcastle upon Tyne 1965. Edited by W. R. Hindmarsh, F. J. Lowes, P. H. Roberts and S. K. Runcorn. Edinburgh, London, O & B, 1967. xiv, 436p, plates, tables, diags, refs, indexes. 7 *gns*.

B-C Authoritative reports—mainly experimental—on recent earthbound, satellite and deep space probe investigations of terrestrial, solar, planetary and stellar magnetism. The results of optical Zeeman studies, centimetre and microwave observations and sensitive probe-borne magnetometry are discussed and the status of inferences drawn are critically examined in terms of current magnetohydrodynamic theories of the origin of these magnetic phenomena.

- KVASNICA, J. 278
 Physical fields. Tr. by J. Hýbner, ed. by G. A. Toombs. London, Iliffe; Prague, SNTL, [1967]. 184p, diags, index. 17s 6d. *Physics paperbacks*.

B An introduction to field theory, covering very briefly the basic principles of classical electromagnetic theory, nonrelativistic quantum mechanics and quantum field theory. Almost no applications are considered, but the fundamental laws and equations are explained with clarity.

- van der WAERDEN, *ed.* 279
 Sources of quantum mechanics. Amsterdam, North-Holland, 1967. xi, 430p, tables, diags, index. 100s.

B This excellent book consists of the main papers published during 1917–25 by Einstein, Ehrenfest, Bohr, Ladenburg, Kramers, Slater, Born and van Vleck, which give an insight into the development of quantum mechanics; and papers by Heisenberg, Born, Jordan, Pauli and Dirac that appeared in 1925–6 forming the elements of matrix mechanics. The translations are good and the detailed introduction by the editor is lucid and a pleasure to read.

539.1 Nuclear Physics

- BATES, D. R. and ESTERMANN, I. *eds* 280
 Advances in atomic and molecular physics, vol. 2. NY, London, Academic P, 1966. xi, 484p, plates, tables, diags, refs, indexes. 132s.

C This volume contains extensive, well-documented reviews of the following: calculation of Van der Waals interactions, thermal diffusion in gases, spectroscopy in the vacuum ultraviolet, measurement of the photoionization cross sections of the atomic gases, theory of electron-atom collisions, experimental studies of excitation in collisions between atomic and ionic systems, and mass spectrometry of free radicals.

- BROWN, G. E. 281
 Unified theory of nuclear models and forces. 2nd ed. Amsterdam, North-Holland, 1967. xi, 259p, tables, diags, index, bibliog. 57s.

C Gives a unified description of the various nuclear models, including the shell model, the collective model and the optical model. Also included are chapters on the theory of nuclear matter and the calculation of effective forces in nuclei: these were not dealt with in the first edition. The description employs the language of many-body theory.

- FARLEY, F. J. M. *ed.* 282
Progress in nuclear techniques and instrumentation, vol. 2. Contributions by P. H. Rose, A. Galejs, W. W. Neale, K. H. Reich and K. Soop. Amsterdam, North-Holland, 1967. 340p, plates, tables, diagrs, refs, indexes. 100s. [Vol. 1 revd May 1965 no. 232.]

C Detailed review articles with extensive bibliographies on the acceleration of ions in tandem accelerators, electrostatic separation of particles in high energy beams, synchrotron beam extraction and the principles involved in data extraction from bubble chamber film. All start from first principles, are written by specialists and are useful surveys for experimenters in the field of medium and high energy physics.

- MORAVCSIK, M. J. *ed.* 283
Recent developments in particle physics: proceedings of the First Pacific International Summer School in Physics, August 1965. NY, London, Paris, Gordon & Breach, 1966. 263p, tables, diagrs, refs, bibliog. \$15.00. *Nuclear physics, vol. 3*. Paperback.

C Detailed accounts of current theories, sometimes tentative, in particle physics by leading contributors, largely devoted to the concepts of 'bootstrap' mechanics, symmetries and group methods. Particle and field theories are discussed together with symmetry breaking, conservation and particle reactions. Useful references throughout.

54 Chemistry

- DAVIES, C. N. *ed.* 284
Aerosol science. London, NY, Academic P, [1967]. xviii, 468p, plates, tables, diagrs, refs, indexes. 115s.

C Experts from several countries have provided accounts of different aspects of aerosol science. The treatment is that of pure science, but information has been collected as appropriate from the widely scattered technological literature. Twelve fully documented articles deal with the generation, coagulation and electrical behaviour of aerosols, with photo- and thermo-phoresis, with the filtration, adhesion and deposition of aerosols, and with optical measurements on aerosols. The work should be of particular value to research workers and other specialists in the field.

- SIDGWICK, N. V. 285
Organic chemistry of nitrogen. 3rd ed. revd and rewritten by I. T. Millar and H. D. Springall. OUP, [1967]. xii, 909p, frontispiece, tables, diagrs, refs, indexes. 8 gns.

B The new edition of this distinguished work is most welcome. An excellent portrait and appreciation of the original author provides a suitable setting for the text which has been almost completely rewritten, but which succeeds largely in maintaining the character of the earlier editions. Thirty essays provide a remarkably up-to-date account of many topics taken mainly from aliphatic and aromatic nitrogen compound chemistry, although the simpler heterocyclic systems and the nucleic acids are also described. It is a pity that the high price will limit its use by degree and research students.

56 Palaeontology

- BROUWER, A. 286
General palaeontology. Tr. by R. H. Kaye. Edinburgh, London, O & B, 1967. viii, 216p, illus, plates, tables, diagrs, index, bibliog. 35s. Paperback.

B The book deals with the principles underlying the study of fossils, especially the factors which determine their occurrence and distribution. This side is neglected by most textbooks on palaeontology which deal almost exclusively with systematic palaeontology. This book, because of its different emphasis, is a useful complementary text. It is a pity that the explanations and the diagrams are so cryptic.

57 Anthropological and Biological Sciences

- BAKER, J. J. W. and ALLEN, G. E. 287
Study of biology. Reading (Mass.), London, [etc], Addison-Wesley, ©1967. xv, 667p, illus, plates, tables, diagrs, appendixes, index, bibliog. 57s. *Addison-Wesley series in life science*.

B This first-year textbook is designed to illustrate the underlying pattern of deductive logic in scientific experiment and observation. The inductive approach is used throughout to emphasize the logical structure of scientific generalizations. Critical experiments and

extracts from original papers are analysed in detail. A good introductory text, with exercises, on scientific method as well as on general biology.

STERN, C. and SHERWOOD, E. R. eds 288

Origin of genetics: a Mendel source book. San Francisco, London, Freeman, [1967]. xi, 179p, plates, tables, bibliog. 36s cloth; 18s paper.

B-C This book is a compilation of papers, letters and comments written or made by Mendel and others in relation to his original work on plant hybridization. There are personal accounts of the rediscovery of Mendel's work by de Vries and Correns, translations of Mendel's two genetic papers and of some of his correspondence with Nageli and some comments by Sewall Wright on Fisher's (1936) statistical analysis of Mendel's data.

577.1 Biochemistry

HASLEWOOD, G. A. D. 289

Bile salts. Methuen, 1967. xi, 116p, plates, tables, diagrs, refs, appendix, index. 27s 6d. *Methuen's monographs on biochemical subjects*.

B The author has made many important contributions to the subject. He has now provided an excellent, comprehensive and well documented survey of interest to organic and biochemists and to biologists. The function, chemistry, methods of isolation, identification and analysis, and the biosynthesis of bile salts are discussed successively. There is a chapter on artefacts of enterohepatic circulation and another on human bile salts. A final chapter deals with evolutionary implications of bile salt differences which are collected in an appendix.

ROODYN, D. B. ed. 290

Enzyme cytology. London, NY, Academic P, 1967. xx, 587p, plates, tables, diagrs, refs, appendix, indexes. 140s.

C The intracellular localization of enzyme activity is extensively reviewed. The technique of subcellular fractionation and analysis is described critically. Major sections deal with the nucleus, the mitochondrion, chloroplast, lysosomes and phagosomes, ribosomes and the soluble phase of the cell. When possible the properties of a particular subcellular fraction are interpreted in terms of cellular function. There are many excellent photomicrographs.

58 Botany

BARON, W. M. M. 291

Organization in plants. 2nd ed. Edward Arnold, 1967. vi, 218p, illus, plates, tables, diagrs, appendixes, index, bibliog. 30s hard; 18s paperback.

B The title suggests concern with the gross modification of organs resulting from environmental effects or hormonal activity. This book has a much wider scope, dealing with fundamental processes such as water relations, photosynthesis, respiration and mineral nutrition. It is written as a modern textbook for teaching physiology, with an emphasis on ecological and genetic affinities, and it fulfils this function admirably.

BRIGGS, G. E. 292

Movement of water in plants. Oxford, Blackwell Scientific Publications, 1967. xi, 142p, tables, refs, appendix, index. 32s 6d. *Botanical monographs*.

C This book is concerned with fundamental principles and the first part deals with theoretical concepts governing the expression, in physical terms, of water movement of all kinds. Later chapters relate specifically to situations found in higher plants; the treatment being a severely physical one, providing much information rarely to be found in textbooks of plant physiology.

ROPER, L. 293

Sunday Times gardening book. Nelson, 1967. 240p, plates, index. 3 gns.

A This lavishly produced and excellently illustrated work will be welcomed by all who need advice on the plants likely to give pleasure in gardens of whatever size, aspect or soil condition. The author is a well known horticultural correspondent with much practical experience in the design and content of gardens, but the book is intentionally confined to an appraisal of hardy plants suitable for growing in this country.

59 Zoology

HINTON, H. E. and DUNN, A. M. S. 294

Mongoose: their natural history and behaviour. Edinburgh, London, O & B, 1967. vii, 144p, illus, plates, tables, diagrs, refs, index. 2 gns.

A-B A useful, well illustrated, compilation of information on a little known group of carnivores. The major part is concerned with their natural history, biology and distribution, but those chapters which are devoted to Indian folk tales and worship by ancient Egyptians are particularly interesting. The final chapter gives information on all known species and provides both their scientific and local names.

6 APPLIED SCIENCES

621 *Mechanical and Electrical Engineering*

LIPSON, C.

295

Wear considerations in design. Englewood Cliffs (NJ), Prentice-Hall, ©1967. viii, 145p, tables, diagrs, index, bibliog. 52s cloth; 26s paperback. *Prentice-Hall series in engineering design*.

A-B The main value of this book is as an illustrated review and bibliography of the subject. The treatment is too slight to be of great value to advanced students, and the subject too specialized to be of value as a university textbook.

621.3 *Electrical Engineering*

BERGTOLD, F.

296

Mathematics for radio and electronics technicians. Newnes, 1967. xvi, 304p, tables, diagrs, index. 50s.

A-B This is the first English edition, although much revised, of a book that has already appeared in German. The book is thoroughly practical both in its application and presentation. Starting from the simplest possible level it progresses to calculus with complex values. Each chapter has a summary, a set of problems and a set of questions. There are extended answers to the problems at the end of the book which make it a valuable teaching aid for the radio and electronics technician.

DAKIN, C. J. and COOKE, C. E. G.

297

Circuits for digital equipment. Iliffe, 1967. 21, 433p, plates, tables, diagrs, refs, index. 5 gns.

B A comprehensive treatment of a subject previously only dealt with in conjunction with other material. It covers switching characteristics of diodes and transistors, waveform generation and amplification, basic logical circuits, methods of information storage, analog/digital conversion, digital indicators and there is a useful chapter on reliability giving worked examples. Only current techniques are covered, but a number of new ones are omitted for example fluid and thin film logic.

DEAN, K. J.

298

Integrated electronics. C & H, 1967. xi, 132p, plates, tables, diagrs, appendixes, index, bibliog. 28s. *Modern electrical studies*.

A-B Recommended as an introduction to integrated circuits. Monolithic, thin film and hybrid circuits are described with their applications to analogue and digital systems. Comparisons are made between logical systems which use different types of integrated circuit. The various types of field effect transistor are described with the advantages of using these devices in integrated circuits.

299

INSTRUMENTS, ELECTRONICS, AUTOMATION: year book and buyers guide. 3rd ed. Comp. in co-operation with *Instrument Review*, *Electronic Engineering* and *Control*. Morgan Bros, 1967. 729p, plates, tables. 60s.

D There has been a considerable increase in the number of entries in the classified buyers guide section, and the valuable equipment surveys have been revised and four new topics added. The increasing applications of automation in the industries make it essential to have a comprehensive up-to-date reference book covering these aspects of technological development. This year book will be a valuable asset to those with interests in this field.

JUSZLI, F. L., MAHLER, N. and REID, J. M.

300

Basic mathematics for electronics. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xii, 450p, tables, diagrs, appendixes, index. 72s. *Prentice-Hall series in technical mathematics*.

A-B A well presented textbook aiming to give the reader a knowledge of mathematical techniques for the solution of electric circuit problems. The book is an integrated presentation of mathematics and electrical principles, and assumes no prior knowledge of either subject.

621.7 Workshop Practice

HAUSNER, H. H., ROLL, K. H. and JOHNSON, P. K. eds 301
 New methods for the consolidation of metal powders. NY, Plenum P, 1967.
 viii, 255p, plates, tables, diagrs, refs. \$15.00. *Perspectives in powder metallurgy*,
 vol. 1.

C This volume—the first of a series of four—contains fourteen papers, of which two appear to have been specially written and the others to be reprints of papers which appeared between 1959 and 1964 in various technical journals. The papers present the results of researches and the standard is high. The book can be recommended for reference by advanced workers, but it is questionable whether it presents the latest views on the subjects covered.

624 Structural Engineering

GREGORY, M. 302
 Elastic instability: analysis of buckling modes and loads of framed structures. London, Spon; NY, Barnes & Noble, 1967. xii, 354p, tables, diagrs, refs, index. 70s. *Spon's civil engineering series*.

C An advanced discussion of the basic principles of elastic buckling and an application of these principles to the instability of framed structures. The basic principles are illustrated by reference to simple mechanical models, which indicate different forms of buckling. A number of different types of frames are considered, and the solutions to problems are given in detail. A useful text for advanced students of structural engineering.

629.19 Astronautics

ERNSTING, J. 303
 Some effects of raised intrapulmonary pressure in man. Maidenhead, Technivision, for the Advisory Group for Aerospace Research and Development of the North Atlantic Treaty Organization, ©1966. x, 343p, plates, tables, diagrs, refs, index. 95s. *Agardograph 106*.

C This book deals mainly with the problems of the high-altitude conditions encountered in modern aviation. It describes in detail the physiological changes in the pulmonary and cardiovascular systems associated with low barometric pressure, and the ways in which these changes can be modified by positive pressure ventilation.

63 Agriculture. Forestry. Livestock. Fisheries

SMITH, H. E. 304
 Bantams for everyone. Iliffe, 1967. 8, 188p, plates, index. 25s. *Poultry world book*.

A Written by one who has had considerable experience in raising and showing bantams, this is primarily a book for those who might wish to pursue this hobby. The book covers in detail the practice of raising bantams and describes the recognized breeds. The book is not recommended to those seriously interested in the genetics of the inheritance of size, plumage, colour and pattern in these dwarf forms of domestic fowl.

65 Business Techniques. Management

BAKEWELL, K. G. B. 305
 How to find out: management and productivity: a guide to sources of information arranged according to the Universal Decimal Classification. NY, London, [etc], Pergamon P, 1966. x, 354p, tables, appendixes, index. 30s. *Commonwealth and international library of science, technology, engineering and liberal studies*. Paperback.

D A sound guide to the literature of management by a former librarian of the British Institute of Management. The chapters cover careers, education and training, bibliographies, use of libraries, reference works, periodicals, organizations, history; monographs on general and 'scientific' management, office management, finance and accounting, personnel management, production management and marketing. There are reproductions of specimen pages from a number of publications and the references are up to date.

HOBBS, F. D. and RICHARDSON, B. D. 306
 Traffic engineering, vols 1 and 2. NY, London, [etc], Pergamon P, 1967. ix, 214p; vii, 191p, plates, tables, diagrs, indexes. 25s each. *Commonwealth and international library of science, technology, engineering and liberal studies*. Paperbacks.

B These volumes provide useful and up-to-date knowledge in the field of traffic engineering and will be welcomed by students and the practising traffic and highway engineer. Inevitably,

the wide scope precludes the depth of treatment that the specialist on a particular aspect of traffic engineering would require.

JACOBS, O. L. R.

307

Introduction to dynamic programming: the theory of multistage decision processes. C & H, 1967. x, 126p, tables, diagrs, index, bibliog. 30s.

C This book is the first of its kind to appear in the UK and it necessarily leans heavily on developments in the USA. It is intended for final year undergraduates and postgraduate work for students with a reasonable competence in mathematics. After an introductory chapter, the author considers decision processes in discrete and continuous time. These chapters provide a basis for considering the more difficult, but more lifelike, decision processes where probability distributions occur and where the question is one of adaptive control. A convenient general summary is given to supplement the summaries at the ends of chapters. This is very much a teaching text and does not pretend to pursue the excitement of dynamic programming as a management technique. It is important to have a book in this form, however, and it deserves a warm welcome.

MANHEIM, M. L.

308

Hierarchical structure: a model of design and planning processes. Cambridge (Mass.), London, MITP, ©1966. xii, 227p, tables, diagrs, refs, appendixes. \$8.50. *MIT report no. 7*. Paperback.

C This is the publication of a doctoral thesis on the application of Bayesian decision theory ideas to the problem of highway route location, the problem being structured as a hierarchy of such decisions. An example computation is given for a hypothetical situation, and a computer programme to perform these tasks on a time-shared system is described.

NEMHAUSER, G. L.

309

Introduction to dynamic programming. NY, London, Sydney, Wiley, ©1966. xiii, 256p, tables, diagrs, refs, index. 64s. *Series in decision and control*.

C This book is the first of a new series whose editor is one of the pioneers in the field of decision processes. The author has the appropriate dual experience of teaching and consulting in the general field of operational research. The chief feature of this book is its approach to the computation problems involved in the solution of dynamic programming (multi-stage decisions) models. Examples are presented with detailed analysis and many flow-charts for computer operation. Even for this relatively new field of management decision techniques, a reasonable number of exercises are provided at the end of each chapter. The bibliography is important because of its advice on the journal literature of importance to those who will wish to keep up to date with developments to this important technique. Most decisions are multi-stage, but not all are accessible to a dynamic programming approach. An important aspect of this book is to show how the decision can be elucidated by use of the method. This is of the utmost importance to the wider use of any numerical technique in management at all levels. The book merits a wide circulation and full use and its modest price will not impose the kind of barrier that is so often encountered today.

66 Chemical Technology

HOLLAND, C. D.

310

Unsteady state processes with applications in multicomponent distillation. Englewood Cliffs (NJ), Prentice-Hall, [1967]. xiii, 369p, tables, diagrs, appendixes, indexes, bibliog. 108s. *Prentice-Hall international series in the physical and chemical engineering sciences*.

C The book deals primarily with transient behaviour of batch and continuous distillation columns and numerical solutions of the relevant differential equations. A generalized model of a plate is presented, which incorporates liquid mixing and time lag in liquid flow, and the model used for the analysis of control schemes. Methods are also proposed for the determination of transient plate efficiencies from experimental data.

67/68 Manufactures

311

WORLD KNITTING MACHINERY INDEX 1967. Leicester, The Hosiery Trade Journal, 1967. x, 148p. 50s; 40s *Hosiery Trade Journal* subscribers.

D A directory to knitting machinery—flat, circular (piece-goods, garment-making, seamless stocking, half-hose and sock), straight-bar fully fashioned outerwear, warp and speciality (and needles and knitting elements)—and to makers and agents. Does not claim to be fully comprehensive, but the main makers (nearly a hundred) and models (over five-hundred) are included. No similar reference exists.

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Aslib Book List



A MONTHLY LIST OF RECOMMENDED
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with annotations

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July 1967

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ASLIB BOOK LIST

VOL. 32

NO. 7

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3 SOCIAL SCIENCES

31 Statistics

INTERNATIONAL TUTOR MACHINES LIMITED

312

Introduction to management statistics. EUP, 1967. [200p], tables, diagrs. 40s. *EUP library of programmed texts.*

A This is one of the better programmed courses in elementary statistics; it is directed towards management in business and industry, but would be suitable for anyone who wishes to know something about statistical methods. One of its features, and this may be due to its original association with a particular machine, is that it is not a line-sequence of statements but one which maintains interest by a limited degree of forward/backward switching. This removes the need to adopt any device for covering-up answers or the next steps. As an aid to developing one important aspect of a numerate population, this text is very warmly recommended.

LAMBE, C. G.

313

Statistical methods and formulae. EUP, 1967. x, 159p, tables, diagrs, refs, index. 27s 6d. *Applied mathematics series.*

B This is a helpful book for examination revision, or a quick reference to the main formulae over a reasonable range of basic methods. The explanations and examples are so brief, however, that they could give many people a false idea of statistical methods. Nevertheless this book, used judiciously with surrounding assistance, is probably the best of its kind. The only point of presentation which calls for comment is the use of fiducial theory for interval estimation. This can only raise serious difficulties at the level of presentation used; for practical purposes most of the results are similar to those derived from the straightforward Neyman-Pearson approach of confidence intervals. The tables at the end of this book are now separately available as *Lanchester short statistical tables* by Braithwaite and Titmus, 4s 6d.

5 MATHEMATICS AND NATURAL SCIENCES

MULTHAUF, R. P.

314

Origins of chemistry. Oldbourne, [1967]. 412p, plates, tables, indexes, bibliog. 70s. *Oldbourne history of science library.*

B Chemistry proper scarcely began before 1750. Up till then we have a chemical prehistory comprising metaphysics, alchemy and medicine. Dr Multhauf's thesis is that these sources, particularly medicine, are of greater importance in the history of chemistry than the practice of the metallurgist and assayer. His book is a work of synthesis not rendered superfluous by the existence of larger and more detailed histories, in which the evolution of the fundamental ideas is not so clearly brought out.

51 Mathematics

BERG, L.

315

Introduction to the operational calculus. Amsterdam, North-Holland, 1967. x, 294p, diagrs, refs, appendix, index. 80s. *North-Holland series on applied mathematics and mechanics.* [First pub. Berlin 1962.]

B A survey of algebra and the Heaviside-Laplace processes precedes the core of the book, the construction of a function-ring in which, following Mikusinski, the product is the Duhamel integral. A complete calculus is developed, rigorously, with applications to control, stability, and partial differential equations. Suitable for degree students and engineers with a sound knowledge of calculus.

DICKINSON, D. R.

316

Operators: an algebraic synthesis. London, Melbourne, Toronto, Macmillan; NY, St Martins P, 1967. vi, 245p, tables, indexes. 37s 6d.

B A theory of operators is developed from the concepts of abstract algebra. The elementary theory of abstract algebra, including sets, relations and functions, groups and an algebra of functions, is first developed and the theory of operators is then established. This deals with the basic concept of an operator, applications of operators, difference and differential equations and infinite series of operators. The general level is first-year university, but the book could be read in the last school year. Exercises and solutions are provided.

- HALMOS, P. R. 317
Hilbert space problem book. Toronto, London, Van Nostrand, ©1967. xvii, 365p, refs, index. 92s. *University series in higher mathematics*.
C These 199 problems—which are followed by very brief hints and then, as a last resource, by full solutions—are for those with a reasonable grounding in Hilbert space and some acquaintance with related topics in topology and measure theory. The questions which require decisions or constructions encourage the reader to think for himself, and, even at this high level, to learn by so doing.
- ROBINSON, T. J. 318
Analytical trigonometry. NY, Evanston, London, Harper & Row, ©1967. xiv, 182p, tables, diagrs, appendixes, index. 48s.
B In this elementary text, the trigonometric functions are defined analytically as the cartesian co-ordinates of a point on a circle in terms of arc length; periodicity is thus evident. Angles are introduced later. Simple properties of the functions and their inverses are derived analytically; there is a short chapter on complex numbers and De Moivre's theorem.
- WIENER, N. and others 319
Differential space, quantum systems, and prediction; by N. Wiener, A. Siegel, B. Rankin and W. T. Martin. Cambridge (Mass.), London, MITP, ©1966. x, 176p, appendix, index, bibliog. \$7.50.
C An exposition of three areas of mathematics and mathematical physics in which Norbert Wiener did fundamental work. The areas are idealized Brownian motion and differential space; prediction of time series; and interpretation of quantum mechanics based on hidden variables. A good knowledge of pure mathematics, particularly measure theory, is assumed.
- 53 Physics**
- BROWN, F. C. 320
Physics of solids: ionic crystals, lattice vibrations, and imperfections. NY, Amsterdam, Benjamin, 1967. xiii, 415p, plates, tables, diagrs, refs, appendixes, index. \$13.75.
B A modern undergraduate text introducing lattice symmetry concepts and X-ray, electron and neutron diffraction investigations, and giving detailed coverage of cohesion, elasticity and plasticity, phonons and thermal properties, dielectric and optical theories of simple media, colour centres, point defects, and an interesting account of the photographic process in emulsions. In the more advanced, and condensed, sections some supplementary reading would be desirable and adequate references, with useful problems, are provided.
- FOX, E. A. 321
Mechanics. NY, Evanston, London, Harper & Row, ©1967. xiii, 431p, tables, diagrs, appendixes, index, bibliog. 50s.
B-C A useful text in mechanics for science and mathematics students and advanced students of engineering. The book attempts a unified approach to particles, rigid bodies and continua, including some aspects of fluid mechanics. Particular importance is attached to the kinematics of displacement and strain. Throughout the book a vector and dyadic notation is used.
- GRUVERMAN, I. J. ed. 322
Mössbauer effect methodology, vol. 2: proceedings of the Second Symposium on . . . New York City, January 25 1966. NY, Plenum P, 1966. viii, 191p, tables, diagrs, refs, index. \$12.50. *New England Nuclear Corporation publication*.
C This book contains papers on applications of the Mössbauer effect in a wide range of problems of physics. Its use in other disciplines is illustrated by papers on iron chemistry, on haemoglobin and on the study of meteorites.
- HUANG, T. C. 323
Engineering mechanics; vol. 1, statics. Reading (Mass.), London, [etc], Addison-Wesley, ©1967. xi, 419p, tables, diagrs, indexes. 60s.
B The book covers a course in statics, suitable for engineering students at intermediate and first-year university level. The treatment is by vectors and the theory required for this is developed. Useful exercises are provided. The book is comparable with the many modern US texts which are available at this level.

- OWER, E. *and* PANKHURST, R. C. 324
 Measurement of air flow. 4th ed. NY, London, [etc], Pergamon P, 1966. viii, 367p, plates, tables, diagrs, refs, indexes. 65s.
B A useful survey of methods of measurement of local velocity and total flow rate, and a detailed treatment of Pitot-static tube, orifice, and nozzle. These are applicable to other fluids. There is also useful related information on ducting, for example, the effect of vanes in reducing losses in elbows. The treatment of hot wire equipment is sparse.
- PEARSON, L. R. *and* GROVE, E. L. *eds* 325
 Developments in applied spectroscopy, vol. 5. Proceedings of the Sixteenth Annual Mid-America Spectroscopy Symposium, Chicago, June 14-17 1965. NY, Plenum P, 1966. x, 506p, plates, tables, diagrs, refs, bibliog. \$18.50. [Vol. 3 revd September 1964 no. 482.]
C The thirty-seven papers in this volume cover X-ray, infra-red, Raman, ultraviolet, visible, NMR, emission, flame and atomic absorption spectroscopy, gas chromatography and nuclear particle and gamma ray spectroscopy. The emphasis is on the practical aspects of spectroscopy and the collection should be generally valuable to working spectroscopists.
- ROBERTS, P. H. 326
 Introduction to magnetohydrodynamics. Longmans, 1967. x, 264p, tables, diagrs, appendix, index, bibliog. 60s.
B-C A clear exposition of the mathematical formulation of the motional behaviour of ohmic Newtonian fluids in magnetic fields, concerned more with concepts than application and covering electromagnetic induction, the homogeneous dynamo problem, hydromagnetic equilibria and stability (with a discussion of the pinch effect), Alfvén waves and boundary layer problems.
- SHAMES, I. H. 327
 Engineering mechanics: statics and dynamics. 2nd ed. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xviii, 748p, tables, diagrs, appendixes, index. 112s. *Prentice-Hall engineering science series.*
B Material covered is approximately that of first- and second-year undergraduate courses in British universities, with full, detailed, vectorial treatment of rigid body mechanics and a brief coverage of vibrations. There are many examples and problems.
- SOKOLOV, A. V. 328
 Optical properties of metals. Tr. by S. Chomet, ed. by O. S. Heavens. London, Glasgow, Blackie, ©1967. xvii, 472p, plates, tables, diagrs, refs, index. 120s.
C This book gives for the first time a comprehensive record of the results and progress in this field. The second half deals mainly with magneto-optics, including a good account of the Kerr effect in thin ferromagnetic films. It will be useful to the new postgraduate entering this research topic, and as a reference book to the experienced worker.
- TYABLIKOV, S. V. 329
 Methods in the quantum theory of magnetism. Tr. from Russian by A. Tybulewicz. Foreword by D. C. Mattis. NY, Plenum P, 1967. xvi, 354p, tables, diagrs, refs, appendixes, index. \$13.50.
C A textbook by the well known Russian authority, dealing exclusively with the quantum theory of the Heisenberg model. Spin Hamiltonians, statistical mechanics, second quantization methods, molecular field method and perturbation theory, Green's function method and its application are discussed. There is no mention of the experimental status of the treatment.
- 537 Electricity**
- GUTMANN, F. *and* LYONS, L. E. 330
 Organic semiconductors. NY, London, Sydney, Wiley, ©1967. xvii, 858p, tables, diagrs, refs, indexes. 224s. *Wiley series on the science and technology of materials.*
C A comprehensive reference book with extensive tables and documentation. The presentation reflects the lack of certainty and finality of many aspects of this complex and recently much studied subject. Both theoretical and experimental aspects are covered in some detail, and a good deal of material is included which can be found elsewhere. Band theory, space charge effects, excited states and ionized states of molecular crystals are described in detail. The relationship of semiconductivity to molecular structure is the basis of an extended discussion of results.

539.1 Nuclear PhysicsFISH, B. R. *ed.*

331

Surface contamination: proceedings of a symposium held at Gatlinburg, Tennessee, June 1964. NY, London, [etc], Pergamon P, 1967. x,415p, plates, tables, diagrs, refs, appendixes, index. 140s.

C The papers in this volume are concerned principally with radioactive contamination, though a few are devoted to biological problems and dust-free rooms. The standard of the papers is high, and the book is a useful survey of the situation as in 1964.

54 Chemistry

ALLEN, J. A.

332

Energy changes in chemistry. Boston, Allyn & Bacon, 1966. ix,125p, tables, diagrs, appendix, index. \$1.95 paperback.

B An interesting and unusual approach to the teaching of chemical thermodynamics. It derives various relationships from the study of the effects of chemical equilibria and chemical kinetics, rather than the more usual beginning of deriving first, second and third laws. It is readable and well written and covers a surprising amount of ground. Suitable for undergraduates or for those who desire to refresh their knowledge.

BOCKRIS, J. O'M *ed.*

333

Modern aspects of electrochemistry, no. 4. NY, Plenum P, 1966. viii,316p, tables, diagrs, refs, index. \$12.00.

C This book contains four chapters by different expert authors on a variety of topics. These topics are thermodynamics of electrochemistry, the mechanism of oxidation of organic fuels, anodic and electronic currents at high fields in oxide films, and an economic study of the US electrochemical industry.

GREGG, S. J. *and* SING, K. S. W.

334

Adsorption, surface area and porosity. London, NY, Academic P, 1967. xi, 371p, tables, diagrs, refs, indexes. 95s.

B-C A critical exposition has been made of the use of adsorption data for the evaluation of surface area and pore size distribution of solids. The subject matter is concerned with uses of adsorption data, such as in heterogeneous catalysis, rather than adsorption itself. The subjects include physical adsorption—non-porous, porous and microporous solids; Gibbs' adsorption isotherm; chemisorption; and adsorption from the liquid phase.

REISS, H. *ed.*

335

Progress in solid state chemistry, vol. 3. London, NY, [etc], Pergamon P, 1967. xi,510p, plates, tables, diagrs, refs, indexes. 130s. *Progress in solid-state chemistry series*. [Vol. 2 revd July 1965 no. 357.]

C A series of nine review articles, three on semiconductors, three on ionic substances, one on high pressures and two on metastable and non-crystalline substances. There are useful speculative contributions on solid state electrochemistry, metastable phases produced by quenching and high pressure studies, and particularly notable is the article by Fong and Brebrick on lattice defects and non-stoichiometry.

THOMAS, J. M. *and* THOMAS, W. J.

336

Introduction to the principles of heterogeneous catalysis. London, NY, Academic P, 1967. x,544p, plates, tables, diagrs, refs, indexes. 120s.

B-C An attractively written text which forms a valuable introduction to those about to start research in this field, or who require a detailed and critical survey. Many references are provided. Not only the theoretical but also the experimental and technological aspects of this large and complex subject are dealt with.

57 Anthropological and Biological SciencesDAVIS, B. D. *and* WARREN, L. *eds*

337

Specificity of cell surfaces; a symposium held under the auspices of the Society of General Physiologists at the Marine Biological Laboratory, Mass., September 1-4 1965. Englewood Cliffs (NJ), Prentice-Hall, ©1967. viii,290p, plates, tables, diagrs, refs, index. 82s.

C The first section of this volume concerns aspects of the structure, biosynthesis and function of bacterial cell-walls, membranes, lipids, lipopolysaccharides and pili. These are well written accounts which include recent developments in these subjects. The first two chapters

in the section on animal cell membranes are complementary and carry a good collection of literature on membrane isolation. They deal with density gradient centrifugation and the stabilization of membranes before isolation. The other chapters concerning cells in tissue culture and cell aggregation phenomena are useful reviews. The third section on the molecular basis of complementarity contains two fairly detailed, contemporary accounts—one on the structural basis of antibody specificity and the other on blood group substances.

INGRAM, M. and ROBERTS, T. A. *eds* 338

Botulism 1966: proceedings of the Fifth International Symposium on Food Microbiology, Moscow, July 1966. C & H, 1967. xii, 531p, plates, tables, diags, refs, index. 6 gns.

C Comprising fifty-four original papers and reviews dealing principally with non-clinical aspects of botulism, this book will interest microbiologists, biochemists, pharmacologists and food technologists. Isolation, identification and ecology of *Cl. botulinum* are covered; germination and resistance to lethal agents of its spores; biochemical, immunological and pharmacological properties of its toxin. Of particular interest are four papers on the recently discovered Type F botulism.

ROSE, A. H. *ed.* 339

Thermobiology. London, NY, Academic P, 1967. xiii, 653p, plates, tables, diags, refs, indexes. 140s.

B-C This is a valuable volume which brings together a number of contributions from recognized authorities in different fields of biology. The general theme is the effect of temperature on organisms and the excellent review articles deal with temperature in relation to cells, proteins and enzymes, membranes, micro-organisms, animal viruses, higher plants, insects, invertebrates, mammals and man. There are also papers on medical applications of thermobiology and thermal energy as a factor in the biology of soils and in the biology of the polar regions. Cutting, as it does, across the traditional compartments of biology, this work should interest a very wide range of research workers in biology, physiology and medicine.

577.1 Biochemistry

TUPPY, H. *ed.* 340

Ribonucleic acid - structure and function: proceedings of the 2nd Meeting of the Federation of European Biochemical Societies, Vienna, 21-24 April 1965. London, NY, [etc], Pergamon P, 1966. v, 150p, tables, diags, refs, index. 30s.

C The fourth volume in this series deals with some recent developments, presented at a symposium, in research on ribonucleic acid. Chapters, supplied by authorities on aspects of this subject, include: preparative methods and structure of transfer-RNA, special properties of transfer-RNA, synthesis and function of messenger RNA, and its relevance in repression, structure of ribosomal RNA, properties of viral RNA and RNA interactions in coding. The texts are well written and illustrated and the book may be recommended to workers in the field of nucleic acid metabolism.

58 Botany

ALLAN, M. 341

Hookers of Kew 1785-1911. Michael Joseph, 1967. 273p, plates, index, bibliog. 50s.

A The name of Kew in the world of botany is paramount and it was due to the vision and energy of Sir William, the first Director, that the place was converted from a small derelict royal garden into the leading scientific botanical establishment that it remains today. The Hookers, father and son, initiated the tremendous flow of fundamental and classical works for which Kew is renowned. The biographical history, based on meticulous scrutiny of massive documentation, is an attractive and authoritative account of the lives and work of two of the most eminent British botanists.

HUTCHINSON, J. 342

Genera of flowering plants (Angiospermae); vol. II, Dicotyledones. OUP, 1967. 659p, appendix, indexes. 190s. [Vol. I revd July 1965 no. 370.]

D The publication of another volume of this monumental series is an event of outstanding importance to taxonomic botanists. All genera published up to 1960 are described in the sequence of Cunoniales to Malpighiales according to the Hutchinson system but, although this work is invaluable and indeed indispensable in the identification of genera, many taxonomists will hesitate to accept some of the suggested relationships.

MCLEAN, R. C. and IVIMEY-COOK, W. R.

343

Textbook of theoretical botany, vol. III. Ill. by K. Benson-Evans, section on genetics by K. Lewis. Longmans, 1967. viii,[1109p], plates, tables, diagsr, indexes. 120s.

B This bulky volume, the third of a series of four, has three sections, each almost a book in itself. These deal with palaeobotany, genetics and physiology, rather divergent aspects of the subject and an unusual association. The text is a massive summary of factual details and is a most impressive contribution to this type of botanical literature. It would have been an advantage to students to have had a bibliography.

59 Zoology

van DUIN, C. Jr

344

Diseases of fishes. 2nd ed. Iliffe, ©1967. 9,309p, plates, tables, diagsr, index. 47s 6d.

B A considerably extended edition of a well-known work. This well written and illustrated book is strongly recommended to anyone working with fish, from fish farmers and breeders to aquarists.

HOPKINS, G. H. E. and ROTHSCHILD, M.

345

Illustrated catalogue of the Rothschild collection of fleas (*Siphonaptera*) in the British Museum (Natural History): with keys and short descriptions for the identification of families, genera, species and subspecies of the order; vol. IV, Hystrihopsyllidae (Ctenophthalminae, Dinopsyllinae, Doratopsyllinae and Listropsyllinae). British Museum (Natural History), 1966. viii,549p, plates, diagsr, index. 360s. *Publication no. 652.*

C This volume continues what is virtually a taxonomic synopsis of the Siphonaptera. In addition to the material indicated in the title, it includes many host records and extensive data on geographical distribution. It does not deal with other aspects of the biology of the species catalogued. It will long remain essential for specialists on the classification of the group.

6 APPLIED SCIENCES

621 Mechanical and Electrical Engineering

INSTRUMENT SOCIETY OF AMERICA

346

Theory of self-adaptive control systems: proceedings of the Second IFAC Symposium September 14-17 1965, National Physical Laboratory, Teddington. Ed. by P. H. Hammond. NY, Plenum P, 1966. xii,363p, plates, tables, diagsr, refs, index. \$15.00.

C The thirty-seven papers and discussions on the analysis and synthesis of self-adaptive, optimal and multi-level control systems consider optimal control using stochastic theory; biological systems; parameter estimation and modelling; model reference control systems; control with parameter identification; optimal and multi-level control systems; and the application of perturbation techniques. The broad coverage of this international conference represents recent progress made in these fields.

621.3 Electrical Engineering

HAWLEY, R. and MAITLAND, A.

347

Vacuum as an insulator: an indexed bibliography. C & H, 1967. ix,116p, index, bibliog. 30s. Paperback.

D This excellent bibliography lists 556 references on the topics of electrical discharges in vacuum and the properties of vacuum as an electrical insulator. Each reference is analysed in terms of forty-eight key topics, for example, anode phenomena, gradient effects, etc., and a 'cross index' indicates the main papers dealing with each of these topics. The bibliography itself is arranged alphabetically by author, and there is a general introduction to the subject which will be useful to workers new to the field.

KING, R.

348

Electrical noise. C & H, [1967]. xii,195p, tables, diagsr, index. 35s. *Modern electrical studies.*

C This book provides an admirable review of the theoretical and practical aspects of random electrical noise. After a good mathematical introduction, the author deals with noise in passive elements, valves, transistors and complete amplifiers. Final chapters discuss noise in communications systems and (in a very practical way) noise measurement and generation.

LAMMERANER, J. and STAFL, M. 349
Eddy currents. Tr. by M. Stafl, ed. by G. A. Toombs. London, Iliffe; Prague, SNTL, [1967]. 233p, tables, diagrs, refs, index. 37s 6d.

C A detailed account of a series of eddy current problems for which analytic solutions can be obtained. A brief treatment of saturation effects is included. A numerical or iterative method of approximate calculation is also described, but this section shows a lack of awareness of recent and more powerful techniques. The book is clearly written and of interest mainly to designers of electrical machines and other equipment who need to predict eddy current effects, and to university students, particularly postgraduate, specializing in the same field. The book was originally published in Czechoslovakia and includes very few English or American references.

LEDGER, A. S. P. and ROCHE, N. H. 350
Fundamental electronics. London, Glasgow, Blackie, ©1967. ix, 594p, tables, diagrs, appendixes, index. 75s cloth; 40s paperback.

B This book not only fulfils its aim to provide a comprehensive textbook for students on courses in electrical engineering and electronics, but, because of the excellent presentation of information and diagrams, it also provides a very useful reference volume. It is a pity that in a book of this standard there are no bibliographies.

OWEN, G. E. and KEATON, P. W. 351
Fundamentals of electronics, vols II and III. NY, Evanston, London, Harper & Row, ©1967. viii, 295p; viii, 350p, tables, diagrs, appendixes, indexes. 3 gns each. *Harper's physics series*. [Vol. I revd May 1967 no. 246.]

B Volume II is an account of the physics of electronics and electronic devices. The first chapter is a concise statement of the physical principles (Maxwell's equations, statistics, quantum mechanics, etc). Later chapters apply physical theory to charged particle dynamics, vacuum tubes, the theory of solids and semiconductors. Volume III uses the mathematics and theory of volume I and the physical principles of volume II applied to the problem of understanding and designing electronic circuits. Although each volume is complete in itself, the three volumes together provide a sound basic course for the student of electronics and also a source of information on electronics for scientists engaged in other fields. It is particularly useful to find a unified treatment and consistent nomenclature relating to these different aspects of electronics.

621.7 Workshop Practice

HAUSNER, H. H., ROLL, K. H. and JOHNSON, P. K. eds 352
Vibratory compacting: principles and methods. NY, Plenum P, 1967: xi, 298p, plates, tables, diagrs, refs, bibliog. \$17.50. *Perspectives in powder metallurgy*, vol. 2. [Vol. 1 revd June 1967 no. 301.]

C This book consists of four papers of a high standard together with a short specialist bibliography. The papers are reprints of works previously published elsewhere. The first paper, of nearly two hundred pages, is a comprehensive treatment of the general problem of compaction, and the others deal with the compaction of metal powders and nuclear fuel. The book is of interest to all working in fields in which compaction is involved.

PAINE, F. A. ed. 353
Packaging materials and containers. London, Glasgow, Blackie for the Institute of Packaging, ©1967. 377p, plates, tables, diagrs, index, bibliog. 70s.

B Because of the scarcity of good textbooks on packaging technology, this book—a companion volume to *Fundamentals of packaging*—is very welcome. The first two sections cover most types of container and the applications of many packaging materials available today for both the consumer market and industry. The third section deals with ancillary packaging materials and methods. This book should prove valuable not only to students but also as a reference tool for the practising technologist.

623 Military and Naval Engineering

BAXTER, B. 354
Naval architecture: examples and theory. Griffin, 1967. ix, 450p, frontispiece, tables, diagrs, index, bibliog. 78s.

B This should not be regarded as a textbook; the fairly brief text is essentially an outline, illustrated by about a hundred worked examples, mainly of final degree standard. There are also problems for solution by the student. As a supplement to one of the standard textbooks it should be very helpful.

65 Business Techniques. Management

BRODIE, M. B.

355

Fayol on administration. Lyon, Grant & Green, 1967. xii,46p, tables, index, bibliog. 10s 6d. *Administrative Staff College monograph*. Paperback.

A Henri Fayol was one of the early theorists of formal organization. He attempted to derive, from the experience of management, some general principles of practical use for those who have to run organizations. The present volume is a short review of the development of Fayol's theories. It succeeds in what it sets out to do, namely to 'add a modest historical dimension to current thinking' on theories of administration and management.

PENG, K. C.

356

Design and analysis of scientific experiments: an introduction with some emphasis on computation. Reading (Mass.), London, [etc], Addison-Wesley, ©1967. ix,252p, tables, diagrs, refs, appendixes, index. 72s.

C A knowledge of calculus, elementary matrix theory and some statistics is required for this text, which is written for computer programmers and statisticians. Various factorial designs and non-factorial treatments are discussed. A treatment of the numerical procedures in analysis of variance, and the basics of covariance analysis are given. Most techniques are introduced in such a way as to be easily programmed, and some FORTRAN programs for analysis of common experiments are appended.

655 Printing, Publishing, Book Trade

KARCH, R. R. and BUBER, E. J.

357

Offset processes. Technical P, ©1967. 570p, plates, tables, diagrs, appendix, index. 3 gns. *Graphic arts procedures*.

B Like its predecessor, *Graphic arts procedures*, this book is intended to educate the beginner to a considerable degree of proficiency. Well illustrated, with detailed explanations (including a considerable amount of precise data), it covers the whole field of offset production from preparing copy to bindery operations. There are questions and answers on each chapter and a glossary of technical terms. The only drawbacks are its American terminology and a rather sketchy index.

66 Chemical Technology

VARGIN, V. V.

358

Technology of enamels. Tr. from the Russian and ed. by K. Shaw. Maclaren, ©1967. vii,290p, tables, diagrs, index. 95s.

B This is a useful addition to the very few books on this subject. It is a standard text in Russian universities offering ceramics courses. It covers the raw materials, their preparation and the whole process of enamelling on metals. The last chapter deals with special ceramic coatings for use at high temperatures.

WEALE, K. E.

359

Chemical reactions at high pressures. Spon, 1967. xv,349p, tables, diagrs, refs, indexes. 70s. *Spon's chemical engineering series*.

C The effects of pressure on chemical reactions form a fascinating, fruitful and rapidly advancing field of endeavour, and this timely and critical review will be welcomed by senior students and graduates in chemistry and chemical engineering. The newcomer to the subject can confidently turn to this volume for a complete, up-to-date and well-written account.

669 Metallurgy

BUTTS, A. and COXE, C. D. eds

360

Silver: economics, metallurgy, and use. Sponsored by Handy & Harman. Toronto, London, [etc], Van Nostrand, ©1967. x,488p, plates, tables, diagrs, refs, indexes, bibliog. 108s.

B Whether the reader is interested in the history of silver from the beginning of civilization, the aesthetics of its application or the science and technology of its extraction, fabrication, properties and use, useful information will be found in this excellent comprehensive work of reference. It should attract a wide range of readership, from students to those specializing in the production or use of the metal in commerce.

COHEN, J. B. and HILLIARD, J. E. eds

361

Local atomic arrangements studied by X-ray diffraction: proceedings of a symposium held in Chicago, February 1965, under the sponsorship of the Physics and Chemistry of Metals Committee of the Institute of Metals Division, The Metallurgical Society, American Institute of Mining, Metallurgical, and Petroleum Engineers. NY, London, Paris, Gordon & Breach, ©1966. 381p, plates, tables, diags, refs, index. \$22.00. *Metallurgical Society conferences, vol. 36.*

C The proceedings are, in effect, a review of the quantitative measurement and interpretation of X-ray diffuse scattering, with emphasis on advances made during the last decade. Two main areas are covered: the short range order effects in disordered binary alloys and liquid alloys, and the effects of cold work distortion upon X-ray diffraction pattern. Points raised in discussion that are not covered in the papers are included, together with two additional chapters for the sake of completeness. Invaluable to the research worker in this field.

ISSERLIS, G. ed.

362

Quality control in metal finishing. Based on a symposium at the Borough Polytechnic, London. Manchester, London, Columbine P, 1967. x, 118p, plates, tables, diags, refs, indexes. 30s.

B The book is primarily concerned with the testing of metal finished products, as the means by which quality control may be imposed. The first chapter deals with the basic question of standards and tolerances of various countries. Instruments and techniques used for measuring coating thickness are then described. Coatings properties such as corrosion resistance, reflectivity and hardness of anodic film are dealt with in separate chapters and the book finishes with an examination of the causes and prevention of hydrogen embrittlement. A useful little book of value to the metal finisher and user.

67/68 Manufactures

POLANYI, M. comp.

363

Technical and trade dictionary of textile terms; German-American/English, American/English-German. 2nd revd ed. London, NY, [etc], Pergamon P, 1967. viii, 637p. 200s.

D An unsystematic listing of words and phrases arranged alphabetically by the first letter. American usage has priority and some of the English is clumsy or suspect. The vocabulary is large (725,000 terms) and reflects present usage in the textile industry: fibres, yarns, fabrics, clothing, textile products, processes, machinery, and chemicals. Although this dictionary is not of a high standard, it may be helpful if used judiciously.

681 Precision Mechanisms

ARKADEV, A. G. and BRAVERMAN, E. M.

364

Teaching computers to recognize patterns. Tr. from the Russian by W. Turski and J. D. Cowan. London, NY, Academic P, 1967. xi, 115p, tables, diags, bibliog. 30s.

B-C This monograph is intended to acquaint English-speaking readers with an important aspect of Soviet work on pattern recognition. As it is written in a semi-popular (but not journalistic) manner, it could also serve as an introduction to this topic. The approach used by its authors is based on the notion of a 'compact set'. It is developed logically, and the results of some experiments using a digital computer are given briefly. Other types of algorithm are dealt with, including that underlying Rosenblatt's 'perception'.

DANCE, J. B.

365

Electronic counting circuits. London, Iliffe; NY, American Elsevier, 1967. 390p, plates, tables, diags, refs, appendix, index. 85s.

B-C This book is an ideal training aid for last-year engineering degree students and for use by engineers engaged in designing and servicing electronic equipment. The references included are particularly comprehensive. It is well illustrated with photographs of currently used instruments. Its only fault lies in the fact that it will date quickly because only a small proportion is devoted to solid state devices; many of the valve circuits described have already been replaced by solid state circuitry. This should not detract from its value to students as much of the basic theory will remain relevant.

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NO. 8

AUGUST 1967

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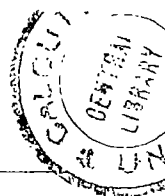
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3 SOCIAL SCIENCES

31 Statistics

YAMANE, T.

366

Elementary sampling theory. Englewood Cliffs (NJ), Prentice-Hall, ©1967. x, 405p, tables, diagrs, refs, appendix, index. 88s.

B This is an up-to-date presentation of sampling techniques aimed at bridging the gap between the superficial approach of some books and the excellent texts for the professional statistician. The author encourages his reader to understand the symbolic form in which the principles are almost universally displayed. The four introductory chapters precede a further four which all deal with basic techniques. The remaining six chapters extend these to special techniques, such as cluster and replicated sampling. Numerous examples are given in detail to allow the reader to see the principles at work, and suggestions for further reading are given, including references to the non-technical aspects of sampling which are excluded from the text. This book can be recommended to those in government and private sectors of the economy who need to use sampling procedures for collecting information.

33 Economics

FISK, P. R.

367

Stochastically dependent equations: an introductory text for econometricians; ed. by M. G. Kendall. Griffin, 1967. viii, 181p, tables, refs, indexes, bibliog. 40s. *Griffin's statistical monographs & courses, no. 21*. Paperback.

C The emphasis is on those parts of statistical theory which are appropriate to the problems of multi-equational models, where this approach is valid. A brief introduction leads to a chapter on specification of model to be investigated and this gives accord to the probability basis of events which are not independent in time. The problem of identification is then dealt with, followed by three chapters on estimation procedures which form the core of the book. Some numerical illustrations are given and an appendix presents some necessary results in matrix algebra; a good understanding of calculus and matrix algebra is essential as well as basic statistical theory. For those involved with econometric problems this monograph must prove helpful.

JORGENSEN, D. W., MCCALL, J. J. and RADNER, R.

368

Optimal replacement policy. Amsterdam, North-Holland, 1967. xii, 225p, tables, diagrs, indexes, bibliog. 60s. *Studies in mathematical and managerial economics, vol. 8*.

C Although this book is skilfully written on two-levels in mathematical and statistical methods, it is a book for the specialist rather than management; even the engineer might find its approach difficult. It is the best book existing in its field and a very fine addition to the series. The case treated in detail by the authors is one where the action following maintenance, in the sense of oilcan and spanner adjustments, is one of replacement; the more complex situation which envisages repair and renewal (reconditioning) actions is not covered. The straight replacement situation with statistically variable failure characteristics is sufficiently complex to show that full representation of many real-life situations is massively complex. The basic replacement model is useful for electronic equipment and provides a foundation for other forms. This book deals with both preventive and preparedness maintenance models, and the development of optimum, adaptive and opportunistic policies gives great scope for real management decisions.

5 MATHEMATICS AND NATURAL SCIENCES

51 Mathematics

AUSLANDER, L.

369

Differential geometry. NY, Evanston, London, Harper & Row, ©1967. xii, 271p, diagrs, index. 50s. *Harper's series in modern mathematics*.

C Modern methods are used to obtain classical results concerning curves and surfaces. Introductory material on vector spaces, differentiable structures and matrix Lie groups, serves to discuss the ground forms, the Frenet formulae and local differential geometry. Finally, global results for Riemannian metrics, and the Gauss-Bonnet theorem are obtained. The honours student already familiar with the elements of the classical theory should gain an insight into powerful modern techniques.

- FICKEN, F. A. 370
 Linear transformations and matrices. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xiii, 398p, tables, diagrs, indexes, bibliog. 4 gns. *Prentice-Hall mathematics series*.

B A well organized text at university level, requiring only school algebra and geometry. After an introduction on number systems and vectors, the book deals with linear spaces and transformations, matrices and determinants, and finally unitary spaces and operators: duality and basis-free methods are emphasized. The exposition is easy and lucid, and there is a variety of exercises with hints for the harder problems.

- SCHMIDT, O. U. 371
 Abstract theory of groups. Tr. from the Russian by F. Holling and J. B. Roberts, ed. by J. B. Roberts. San Francisco, London, Freeman, [1967]. vi, 174p, tables, refs, indexes. 40s. *Series of books in mathematics*.

B The first (Russian) edition appeared in 1916, the second, which was largely a reprint, in 1933. Thus the book is not a guide to modern group theory, but it is so well organized and pleasingly written that a translation is well worth having as an introduction. The theory is substantially that created by Frobenius and Burnside, clearly and simply expounded, but the translator has added a few notes and a brief list of modern texts to which the reader may go for more up-to-date information.

- VEKUA, I. N. 372
 New methods for solving elliptic equations. Tr. from the Russian by D. E. Brown, tr. ed. by A. B. Tayler. Amsterdam, North-Holland; NY, Wiley, 1967. xii, 358p, refs, appendixes, index. 100s. *North-Holland series in applied mathematics and mechanics*.

C A translation of a book originally published in 1948, wherein partial differential equations of elliptic type are studied by complex variable methods which generalize the notion of a complex number and its conjugate and the Cauchy-Riemann operators. Classical solutions are confirmed and new boundary-value problems solved in several practical instances. Main applications are to theoretical elasticity, where the influence of Muskhelishvili is evident.

52 Astronomy. Surveying. Geodesy

- DOLLFUS, A. *ed.* 373
 Moon and planets: a session of the Seventh International Space Science Symposium, Vienna, 10-18 May 1966. Sponsored by Committee on Space Research and International Astronomical Union. Amsterdam, North-Holland, 1967. viii, 321p, plates, tables, diagrs, refs, index. 90s. [See June 1967 no. 274.]

C Knowledge of the moon and planets obtained by means of deep space probes, artificial satellites and balloons is presented by scientists from USA, USSR and other countries. There is a concluding part devoted to relevant theoretical problems, including the origin of the Martian satellites.

53 Physics

- LONGHURST, R. S. 374
 Geometrical and physical optics. 2nd ed. Longmans, 1967. xvi, 592p, plates, tables, diagrs, appendix, index. 40s. Paperback.

B This new edition has been expanded by some sixty pages bringing many of the recent advances in optics to the undergraduate. Discussions of partial coherence, the optical transfer function and Fourier transform spectroscopy are useful important additions. This excellent book must be recommended as a standard text for undergraduates specializing in physics.

- WILKS, J. 375
 Properties of liquid and solid helium. OUP, 1967. xii, 703p, plates, tables, diagrs, refs, appendix, indexes. 150s. *International series of monographs on physics*.

C This first class volume gives a wide and critical appraisal of the physical properties of liquid and solid helium, within a basic theoretical background. It contains a large amount of well referenced data together with good descriptions of the experimental techniques used, and must become a standard text on the subject.

54 ChemistryAVEN, M. and PRENER, J. S. *eds*

376

Physics and chemistry of II-VI compounds. Amsterdam, North-Holland, 1967. xviii, 844p, plates, tables, diags, refs, indexes. 200s.

C This book consists of fifteen chapters on the physical and chemical properties of II-VI compounds by acknowledged experts. The material presented has previously only been available in papers and research reports and is now collated. The field is surveyed critically and areas for future research are delineated. Comprehensive bibliographies are included.

EYRING, H.

377

Physical chemistry: an advanced treatise; vol. II, statistical mechanics. NY, London, Academic P, 1967. xiii, 561p, tables, diags, refs, indexes. 140s.

C An authoritative and comprehensive treatment of statistical mechanics at postgraduate level leading to the solution of problems dealing with properties of systems, equilibria and reaction rates and depending on a knowledge of the partition functions of the constituents of the system. Intended for both chemists and physicists.

HAMER, J. *ed.*

378

1,4-Cycloaddition reactions: the Diels-Alder reaction in heterocyclic syntheses. NY, London, Academic P, 1967. xii, 500p, tables, diags, refs, indexes. 176s. *Organic chemistry, a series of monographs.*

B-C There is variety in the approach and presentation of these well documented articles. The book is of special interest to research workers in organic and photochemistry, especially as review articles are not available for much of the material. After a brief general introductory article, the cycloaddition of various dienophiles, containing at least one heteroatom in the functional unit, to dienes is described. Particularly interesting are the chapters on oxygen as dienophile and on cycloadditions to o-quinones and 1:2-diketones.

LEWIS, F. A.

379

Palladium hydrogen system. London, NY, Academic P, 1967. xii, 178p, plates, tables, diags, refs, indexes. 45s.

C Covers both theoretical and practical aspects of the physical, physico-chemical and electrochemical properties of the palladium hydrogen and related systems. This critical review, by a prominent contributor to the field, of the rather scattered literature will be welcomed by all concerned either with the pure side or with applications in catalysis and electrolysis.

MARTIN, R. E. S.

380

Essential mathematics for chemists. Longmans, 1966. vii, 133p, tables, diags, appendix, index. 18s. Paperback.

B A useful remedial text for those reading chemistry up to Pass Degree standard. It is about 'A' level standard, but does not cover the whole course. It is however oriented to the type of calculations required in chemistry, and in this way makes an immediate impact.

55 Geology. Meteorology

DREGHORN, W.

381

Geology explained in the Severn Vale and Cotswolds. Illus. by the author. Newton Abbot, David & Charles, 1967. 187p, illus, appendix, bibliog. 30s.

A Excellent block diagrams, line drawings and sketch maps form an integral part of this layman's guide to the geology and scenery of an area bounded by Stratford, Cirencester, Bristol and the Malvern Hills. Written especially for use by students, amateur geologists and countrymen, it is of equal interest to all who are familiar with the Severn Vale.

57 Anthropological and Biological Sciences

ASHTON, B. G.

382

Genes, chromosomes and evolution. Longmans, 1967. xii, 172p, plates, tables, diags, index, bibliog. 12s 6d. *Principles of modern biology*. Paperback.

B A simple guide to Mendelian heredity, variation and evolution with useful chapters introducing human genetics and plant and animal breeding. Chromosome mechanics, breeding systems and the gene concept are discussed in simple terms although there is little reference to molecular genetics. An important attribute of the book is the list of useful suggestions for practical class work.

- LEWIS, T. *and* TAYLOR, L. R. 383
Introduction to experimental ecology. London, NY, Academic P, ©1967. xi, 401p, illus, plates, tables, diagrs, appendixes, index. 37s 6d.
A-B A valuable basic text, at a reasonable price, suitable for class work or individual study at all levels from mid-school to undergraduate. Forty-five detailed and graduated exercises form the core of this book, backed by a clear and comprehensive account of the necessary statistical techniques, keys to common (British) land invertebrates, a chapter on apparatus and techniques, and an introduction to the general principles of ecology. This is a well produced and well illustrated book.
- MATHER K. 384
Elements of biometry. Methuen, 1967. x, 193p, tables, diagrs, refs, index. 35s.
B-C An understanding of the concepts and methods of biometry, or quantitative biology, is essential to the design, conduct and analysis of biological experiments. Professor Mather's new work is based on a course given to second-year undergraduates and covers less statistical ground than his earlier *Statistical analysis in biology*. The essentials of representation and analysis of variation are well presented and there are useful chapters on planning experiments, relating variables, analysing frequencies and estimating parameters. No great knowledge of advanced mathematics is assumed and the book should be valuable to all biologists.
- OPPENHEIMER, J. M. 385
Essays in the history of embryology and biology. Cambridge (Mass.), London, MITP, ©1967. ix, 374p, diagrs, refs, index. \$12.50.
B This book is written by a practising embryologist for those familiar with the main outlines of modern embryology. The book begins with a survey of twentieth-century concepts and then considers the work of earlier embryologists, ending with the seventeenth century. It is excellently done.
- SWANSON, C. P., MERZ, T. *and* YOUNG, W. J. 386
Cytogenetics. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xii, 194p, plates, tables, diagrs, refs, index, bibliog. 40s cloth; 26s paper. *Prentice-Hall foundations of modern genetics series*.
B This book is about chromosomes and it is particularly concerned with the variations in chromosome structure, number and behaviour that are encountered in nature. The selection of contents is well balanced and there are excellent accounts of modern ideas on chromosome structure, replication and crossing-over. The illustrations are superb and there are useful bibliographies for each chapter.
- 58 Botany**
- HUXLEY, A. 387
Mountain flowers in colour. Ill. by D. Barry and M. Grierson. Blandford P, 1967. 428p, illus, plates, indexes, bibliog. 30s.
A There is little doubt that this convenient volume will enjoy great and deserved popularity among those who need an easy and accurate guide to the flowers found in the mountainous regions. It is intended that the layman, without becoming enmeshed in too much botanical detail, should use the fine series of illustrations in an attempt to match specimens before turning to the descriptive text for fuller information.
- INTERNATIONAL ATOMIC ENERGY AGENCY 388
Effects of low doses of radiation on crop plants: report of a panel. Vienna, the Agency [distrib. by HMSO], 1966. 58p, tables, diagrs, refs. 10s 7d. *Technical reports series*. Paperback.
C This report comprises five papers by authors at four centres in Europe and one in the US. Three papers describe experiments which indicate that under some conditions low doses of radiation stimulate plant growth, especially at the seedling stage; two papers discuss possible mechanisms. Clearly the major difficulty is to define the experimental conditions under which effects of this type can be demonstrated and the report makes a useful contribution to this problem.
- INTERNATIONAL ATOMIC ENERGY AGENCY 389
Isotopes in plant nutrition and physiology: proceedings of the symposium on the use of . . . jointly organized by the IAEA and the Food and Agriculture

Organization of the United Nations, held in Vienna, 5-9 September, 1966. Vienna, the Agency [distrib. by HMSO], 1967. 596p, plates, tables, diagrs, refs, index. 88s 4d. *Proceedings series*. Paperback.

C For many research problems in plant physiology and nutrition the use of isotopes is indispensable and a wide variety of techniques is possible. The forty-five papers and discussions in this volume give a good survey of recent and current research in this field. Nearly a quarter of the papers are concerned with the influence of genetic variation on plant nutrition, and other sections deal with soil chemistry, assimilation and metabolism, transport phenomena, ion absorption and experimental techniques.

INTERNATIONAL ATOMIC ENERGY AGENCY 390

Limiting steps in ion uptake by plants from soil: report of a panel convened by the joint FAO/IAEA Division of Atomic Energy in Agriculture and held in Vienna, 22-26 November 1965. Vienna, the Agency [distrib. by HMSO], 1966. 154p, plates, tables, diagrs, refs. 24s 9d. *Technical reports series*. Paperback.

C This compilation consists of sixteen papers dealing with various factors influencing ion uptake by plants. It is essential for the research worker in this field and valuable also to the general botanist and agronomist.

SLATYER, R. O. 391

Plant-water relationships. London, NY, Academic P, 1967. xii, 366p, tables, diagrs, indexes, bibliog. 90s. *Experimental botany, an international series of monographs, vol. 2*.

C Plant and water relationships are discussed with extensive use of physical and mathematical expressions. Water movement and availability in soils and its incorporation into plant cells and tissues are related both to physiological processes, and to environmental conditions.

59 Zoology

CHEN, T.-T. ed. 392

Research in protozoology, vol. 1. London, NY, [etc], Pergamon P, 1967. vii, 428p, plates, tables, diagrs, refs, indexes. 110s.

C This first of four volumes comprises a collection of excellent reviews of current research in physiology of movement, respiration, excretion and nutrition of *Protozoa*, with relevant ultrastructural observations. There is an initial chapter on ultrastructure of cytoplasmic organelles. It will be invaluable in providing the background information and literature guide for research workers.

CLOUDSLEY-THOMPSON, J. L. 393

Animal twilight: man and game in eastern Africa. Foulis, 1967. ix, 204p, illus, plates, appendixes, index, bibliog. 36s.

A Although concerned with African animals, much of the material in this book is relevant to the more general problems of extinction and conservation. Chapters on African hunting methods, firearms and human settlement, the reactions of big game to man, the carnivores, ruminants and reptiles make fascinating reading. In addition to some good black and white plates, there are some interesting historical drawings.

6 APPLIED SCIENCES

62 Engineering and Technology

LEWIS, D. comp. 394

Shock and vibration: a selected annotated bibliography. Havant (Hampshire), Kenneth Mason, 1967. 124p, bibliog. 1 gn. Paperback.

D This bibliography contains a careful selection of 684 brief annotated abstracts of papers and articles published mainly in the period 1961-6. Broadly it covers the field of environmental engineering and is intended for the use of engineers concerned with the designing of equipment to withstand shock or vibration, or with the environmental testing of equipment or components. Highly theoretical papers are in general excluded, as are the fields of acoustics, noise reduction, seismology and blast effects of explosives. Structural analysis and damping, however, are extensively covered.

STANFORD, E. G., FEARON, J. H. and MCGONNAGLE, W. J. eds 395

Progress in applied materials research; vol. 7. Heywood Books, 1967. 9, 355p, plates, tables, diagrs, refs, index. 95s. [Vol. 5 revd July 1964 no. 386.]

B-C Seven review papers concerned with the general field of flaw detection in materials. The topics covered include X-ray diffraction, creep properties of metals and alloys, films in arc-and flame-spraying, backscattered radiation, the ultra-sound camera, semiconductor materials and devices and ultrasonic flaw detection in very large forgings. The standard of the papers is high and the volume is well illustrated.

621 *Mechanical and Electrical Engineering*

INTERNATIONAL ATOMIC ENERGY AGENCY 396

Fast reactors. Vienna, IAEA [obtainable from HMSO], 1966. xxiii, 561p, indexes, bibliog. 84s 8d. *Bibliographical series no. 22*.

D This bibliography contains 2,383 references with abstracts and covers the period from September 1958 to May 1966. The topics covered are the physics of fast neutron systems and the design, technology and economics of fast reactors. There is an author index and a permuted-title KWIC subject index, both prepared by computer.

621.3 *Electrical Engineering*

BALAKRISHNAN, A. V. *ed.* 397

Advances in communication systems: theory and applications, vol. 2. NY, London, Academic P, 1966. xiii, 328p, plates, tables, diagrs, refs, indexes. 108s. [Vol. 1 revd August 1965 no. 417.]

C A collection of seven separate articles on advanced aspects of communication systems. Four articles are on sophisticated theory of laser systems, stochastic approximation, optical techniques and adaptive data compression systems. The remaining articles contain practical descriptions of synchronous satellite systems, the American manned space-flight communication system and the Orbiting Geophysical Observatory communication system.

EAGLESFIELD, C. C. 398

Laser light: fundamentals and optical communication. London, Macmillan; NY, St Martin's P, 1967. viii, 192p, plates, diagrs, refs, index. 30s. *Topics in physics and chemistry*.

A-B This book could serve as a largely qualitative introduction for the general reader and for electronic and communications engineers who have little background in atomic physics. The first ten chapters deal with basic ideas and mechanisms of lasers, and the last five with various aspects of their application to communication systems.

MARKUS, J. 399

Electronics and nucleonics dictionary. 3rd ed. NY, London, [etc], McGraw-Hill, [1967]. vii, 743p, diagrs. 132s.

D It is six years since the second edition of this dictionary appeared and this has obviously necessitated a considerable increase in the size. The format remains the same but many more of the definitions are now illustrated. This dictionary should be a useful tool for those trying to keep up with the developing jargon of the electronics and nucleonics fields.

OGATA, K. 400

State space analysis of control systems. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xi, 596p, diagrs, refs, index. 112s. *Prentice-Hall electrical engineering series*.

B Based on a full treatment of matrix analysis, this book outlines the state-space approach and provides a very firm basis for modern theories of optimal control. There are chapters on controllability, observability and stability but nothing on model control.

PÁTEK, K. 401

Lasers. Tr. by H. Arend, ed. by V. W. Rampton. London, Iliffe; Prague, SNTL, 1967. 288p, tables, diagrs, refs, index. 45s.

B-C An introductory text intended for research workers but also useful to undergraduates. The first seven chapters introduce basic ideas and describe the various types of laser system, and the remaining five chapters discuss novel types of lasers and their applications. The treatment throughout is interesting, and offers a deeper insight than many similar books.

624 *Structural Engineering*

SMITH, R. C. 402

Principles and practices of heavy construction. Englewood Cliffs (NJ), Prentice-Hall, ©1967. viii, 343p, plates, tables, diagrs, index. 96s.

B An authoritative presentation of the various stages of current US construction practice for buildings using timber, steel and concrete, written primarily for the engineer and contractor. The eighteen chapters are arranged in sections representing the basic stages from site investigation to the final construction. The book is well written and provides the principles and practice of heavy construction in logical sequence.

625 *Railway and Highway Engineering*

CLENDINNING, J. and OLLIVER, J. G.

403

Principles of surveying. 3rd ed. London, Glasgow, Blackie, [1967]. xiv, 463p, tables, diags, appendixes, index. 50s.

B This book is written principally for students working for the Associate Membership examinations of the Institute of Civil Engineers, but is equally suitable for civil engineering degree students. Surveying instruments are not described as these are included in a companion volume. The degree student will require a more comprehensive and up-to-date treatment of surveying from air photographs than is given.

63 *Agriculture. Forestry. Livestock. Fisheries*

KIRCHGESSNER, M., FRIESECKE, H. and KOCH, G.

404

Nutrition and the composition of milk. Tr. from the German by C. T. M. Herriott. Crosby Lockwood, ©1967. xviii, 273p, tables, diags, refs, index. 55s.

International monographs, aspects of animal and human nutrition.

C This book, which is a translation of the German edition published in 1965, gives a comprehensive account of the effect on the composition of cow's milk of different feeds and methods of feeding. Separate chapters are devoted to the influence of the diet on the physical properties of milk and on the content in milk of fat, protein, minerals, vitamins, enzymes and anomalous constituents. The several thousand references cited and the many tables of compositional data included in the text make this a most useful work of reference.

WHYTE, R. O.

405

Milk production in developing countries. Faber, 1967. 240p, tables, diags, index, bibliog. 50s.

B-C In many developing countries starvation may be due to lack of energy-bearing diets, and malnutrition to lack of protein. In some cases the cattle are inherently incapable of meeting the requirement, but frequently long-term plans to produce cattle feeds and a better understanding of their use can bring about a rapid improvement in milk production. From his wide experience of plant growth and of animal production in many parts of the world, the author has described the factors, particularly those in the nutritional environment, which are important. The account ranges from the basic geographic and climatic factors to systems of husbandry. A brief summary is given of milk production in countries grouped under Mediterranean and Near East, Monsoon Asia, Caribbean and Latin America, and Africa south of the Sahara.

66 *Chemical Technology*

GOLDSTEIN, R. F. and WADDAMS, A. L.

406

Petroleum chemicals industry. 3rd ed. Spon, 1967. xiv, 523p, tables, diags, refs, appendixes, indexes. 120s. *Spon's general and industrial chemistry series.*

B-C First published in 1949, this book has become accepted as the standard reference work on petroleum chemicals. This edition is fully revised and includes new sections on aromatics, the production of acrylonitrile from propylene, the production of benzene and naphthalene from alkyl aromatics, the use of palladium chloride/cuprous chloride catalyst complex adaptations in the production of acetaldehyde, acetone and vinyl acetate, and the butadiene route to chloroprene. This is essentially a reference book for the advanced worker in the petroleum chemicals industry and academic workers concerned in this field.

HUGHES, J. R.

407

Storage and handling of petroleum liquids: practice and law. Foreword by C. T. Sutton. Griffin, 1967. xiii, 361p, plates, tables, diags, refs, index. 4 gns.

B A major contribution to a subject of increasing importance to oil companies, equipment manufacturers, local authorities and industrial consumers, etc. The practical aspects of storage and handling of all petroleum liquids, liquefied petroleum gases and natural gas are treated very fully. The section on law will provide the reader with its sources and its relationship to the subject, as frequent reference is made to the relevant Acts of Parliament, Statutory Regulations, Instruments and Orders.

INSTITUTE OF PHYSICS *and* PHYSICAL SOCIETY

408

Gallium arsenide: proceedings of the International Symposium organized by the Institute of Physics and the Physical Society in co-operation with the Avionics Laboratory of the US Air Force, Reading, September 1966. The Institute and The Society, 1967. vii,247p, plates, tables, diagrs, refs, index. 4 gns. *Conference series no. 3.*

C Gallium arsenide has acquired increasing importance in a wide field of semiconductor applications, and this symposium gave an opportunity for reporting the advances made in some of them. These were: materials preparation, including epitaxial techniques and growth from the melt; optical effects, particularly the production of high power lasers; microwave devices, including mixer and varactor diodes and Gunn effect devices; and junction devices, particularly transistors and diodes.

LYUBITOV, Y. N.

409

Molecular flow in vessels. Rev. ed. Tr. from Russian by W. H. Furry and J. S. Wood. NY, Consultants Bureau, 1967. vii,164p, tables, diagrs, refs, appendix, index. \$22.50. Paperback.

C Reviews the mathematical treatment of various types of molecular flow by gases at very low pressures. Among the topics covered are the motion of rarefied gases in cylindrical, conical and bent tubes; effusion from cylinders; evaporation in the Knudsen pressure range; and chemical reactions in long capillaries. An important contribution to the fundamental study of vacuum technology.

669 Metallurgy

COTTRELL, A. H.

410

Introduction to metallurgy. Arnold, 1967. x,548p, plates, tables, diagrs, index, bibliog. 60s.

B A new and unified survey of the whole metallurgical field, based on the new science of metals, linking it with the more traditional aspects of applied metallurgy. There are twenty-five chapters dealing with the structure of metals and alloys, extraction, iron and steel making, phase diagrams, metal crystals, heat treatment, mechanical properties, corrosion, electronic structure and properties and uses. This book will prove of great value to all students and graduate scientists of metallurgy.

67/68 Manufactures**681 Precision Mechanisms**

FOSTER, J. M.

411

List processing. Macdonald, 1967. 54p, tables, diagrs, refs. 1 gn. *Macdonald computer monographs.*

B-C An introduction to list processing for readers with a little knowledge of programming and in particular of Algol notation. An attempt has been made to extract general principles and point out the type of work for which list processing is likely to be useful. The author begins with basic notions about lists, then deals with simple and more advanced methods of programming, garbage collection techniques, and finally compares the principal list processing languages extant. The reader who is unfamiliar with the subject may have to work hard in places, but the exposition is clear and well thought out.

HIGMAN, B.

412

Comparative study of programming languages. Macdonald, 1967. 164p, diagrs, index, bibliog. 45s. *Macdonald computer monographs.*

C This book attempts to treat from the viewpoint of linguistics, the main methods adopted to date of instructing computers. A general theory is developed to help in the description of programming languages, and then the characteristics of the major languages are described. A separate section is devoted to input/output methods, and the final section includes suggestions for further development, both of programming languages themselves, and of the study of them. The bibliography is comprehensive.

MARCHANT, J. P. *and* PEGG, D.

413

Digital computers: a practical approach. London, Glasgow, Blackie, 1967. xiv,200p, plates, tables, diagrs, appendix, index, bibliog. 27s 6d.

B An elementary practical introduction, designed to enable a reader with 'O' level physics to construct basic computing circuits with either relays or transistors, including a complete

wiring diagram for a simple relay computer. A few details of professional methods are also given, together with an outline of programming methods and sufficient information on Pegasus Autocode to give a general idea of its use. Present-generation machines are dealt with only briefly as the object of the book is to convey basic principles rather than survey the most modern machines. However, there is a section on computer applications. A useful book for students at sixth-form or technical level, or for anyone with a practical interest in electronics.

69 Building Industry

KING, H. and NIELD, D.

414

Building techniques; vol. 1, structure; vol. 2, services, finishes and maintenance. London, Spon; NY, Barnes & Noble, 1967. xi,169p; xi,139p, tables, diags, appendixes, indexes. 36s; 32s 6d. *Spon's building and architectural series*. [First pub. as *Building construction illustrated* in 1952.]

A-B Two volumes by experienced authors of building literature which maintain the high standard—in the clearly written text and illustrations—now expected of them. These books are likely to appeal most to students of building and architecture, but they should be included in any library of these subjects, for they provide a useful reference to a wide range of topics. Apart from one doubtful statement vis-à-vis Sfb and UDC, these are excellent books.

REYNAUD, C. B.

415

Critical path network analysis applied to building. George Godwin for The Builder, 1967. vi,152p, plate, tables, diags. 45s.

A-B Deals with the practical aspects of critical path methods, computer applications, resource allocation applied particularly to building and construction. This book will help to implement the technique and so it will be of most use to construction managers and site agents concerned with project planning.

7 THE ARTS

71 Physical planning

HILTON, K. J. ed.

416

Lower Swansea Valley Project. Longmans, 1967. xv,329p, illus, plates, tables, diags, refs, index, bibliog. 3 gns.

A This extremely well produced and valuable book is the result of co-operation between the Departments of Botany, Geography, Geology, Social Science, Civil Engineering and Economics in the University College of Swansea. Their joint report reveals the various factors inhibiting the use of the industrial wasteland on the outskirts of Swansea and suggests steps which could be taken to reclaim the land and to make it socially, physically and economically useful in the future. There are numerous photographs, maps and tables, and the publication should be of very great interest in considering the problems of similar areas in other parts of Britain.

72 Architecture

GATZ, K. ed.

417

Detail: contemporary architectural design, vol. 3. Iliffe, [1967]. 284p, plates, diags. 95s. *Architect and building news book*. [Vol. 2 revd September 1965 no. 487.]

B This is the third in a series devoted to photographic record and illustration of contemporary architectural detail. The material, drawn from many countries, is brilliantly represented by photographs of high quality supplemented by line drawings and brief commentaries. An excellent book for students and architects alike, providing as it does, valuable technical information with considerable artistic merit.

SMITH, D. L.

418

How to find out in architecture and building: a guide to sources of information. London, NY, [etc], Pergamon P, 1967. xii,232p, diags, index. 30s hard; 1 gn paperback. *Commonwealth and international library of science, technology, engineering and liberal studies*.

A-B A survey, for students of architecture and librarianship, of the basic bibliographies, indexes, abstract journals, reference books, monographs, textbooks, pamphlets and periodicals of subjects normally found within the building, planning and architectural classes of a general library. Includes details of the main British and international organizations. Brief notes are also given on classification (Dewey, UDC, Sfb), library catalogues and interloan services. A companion volume will deal in depth with the technology of the construction industries as a whole.

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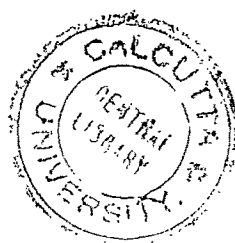
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September 1967

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- C* books of an advanced or highly technical character
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007 Information. Communication. Control Theory

FORNEY, G. D. Jr

419

Concatenated codes. Cambridge (Mass.), MITP, ©1966. xi, 147p, tables, diagrs, refs, appendixes, indexes. \$8.50. *MIT research monograph no. 37.*

B A good introduction to code concatenation techniques which should be of interest to those working in the field of coding research. There is a good theoretical study of non-binary algebraic codes, their structure and properties as well as appropriate decoding algorithms.

5 MATHEMATICS AND NATURAL SCIENCES

SABRA, A. I.

420

Theories of light: from Descartes to Newton. Oldbourne, ©1967. 363p, diagrs, index, bibliog. 70s. *Oldbourne history of science library.*

C This is a detailed and scholarly analysis of the more important seventeenth-century theories about the propagation and behaviour of light. It will be of interest to historians and philosophers of science and to scientists with a historical bent.

SCHOFIELD, R. E. ed.

421

Scientific autobiography of Joseph Priestley (1733–1804): selected scientific correspondence, with commentary. Cambridge (Mass.), London, MITP, ©1966. xiv, 415p, frontispiece, diagrs, appendixes, index, bibliog. \$13.50.

B Priestley's own *Memoirs . . . to the year 1795* are not of great help to the historian of science because Priestley relied to a large extent on his memory, and because he pays more attention to his theology than to his scientific activities. However, his scientific correspondence tells much about his experiments and ideas. Professor Schofield has managed to trace much of this correspondence, which he reproduces here with introductory and connecting commentaries, so as to give the nearest we have to a scientific autobiography from Priestley. This 'autobiography' and the recent excellent biography by F. W. Gibbs will not compete but will supplement each other. Biographical sketches of Priestley's correspondents and bibliographies add to the value of the work.

WEINBERG, A. M.

422

Reflections on Big science. Cambridge (Mass.), London, MITP, ©1967. ix, 182p, table, index. 48s.

A This important collection of essays deals essentially with the social implications of science policy. Under four broad headings 'the new revolutions', 'scientific communication', 'the choices of Big science' and 'the institutions of Big science' it poses the questions of priority and examines the criteria for spending the limited funds available. The author, who is director of one of the largest atomic energy establishments in the USA, writes with authority both as a research worker and as an administrator.

51 Mathematics

BOURBAKI, N.

423

Elements of mathematics; general topology, parts 1 and 2. Paris, Hermann; London, Addison-Wesley, [1967]. vii, 436p; iv, 363p, diagrs, indexes, bibliog. 130s. *Adiwes international series in mathematics.*

C The famous series on the fundamental concepts of modern mathematics, which has so greatly influenced current developments, is at last being translated. The method of exposition is axiomatic and abstract, proceeding always from the general to the particular. This imposes a fixed order on the subject matter and may cause some difficulties for the less advanced reader. In general the work is directed to those at the level of third-year undergraduate or first-year postgraduate students.

CASSELS, J. W. S. and FRÖHLICH, A. eds

424

Algebraic number theory: proceedings of an instructional conference organized by the London Mathematical Society (a NATO Advanced Study Institute) with the support of the International Mathematical Union. London, NY, Academic P, 1967. xviii, 366p, diagrs, refs, index. 100s.

- C Fifteen chapters by experts for readers who know something of modern algebra and have an interest in, but little expert knowledge of, the topic. Tate's famous, but hitherto unpublished, 1950 thesis is also included. The study of class field theory forms the core of the book. A most valuable work for the young mathematician beginning research in this fascinating but somewhat difficult field.
- FISHER, R. C. and ZIEBUR, A. D. 425
Integrated algebra and trigonometry, with analytic geometry. 2nd ed. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xi, 465p, tables, diagrs, index. 72s.
B An introduction to the basic ideas of algebra, trigonometry, and analytic geometry suitable as groundwork to a calculus course. The system of real numbers is first dealt with, introducing the notion and language of sets, which is widely used in subsequent chapters. Functions of various sorts are then studied, followed by chapters on equations, the binomial theorem and probability, sequences and series, and analytic geometry. Exercises with selected answers are provided.
- GRUENBERG, K. W. and WEIR, A. J. 426
Linear geometry. Princeton (NJ), Toronto, London, Van Nostrand, ©1967. viii, 186p, diagrs, index. 45s cloth; 1 gn paper. *University series in undergraduate mathematics*.
C Some of the major themes of elementary abstract algebra, such as vector spaces, isomorphisms, linear mappings, bilinear forms, rings and modules, are developed in connection with affine and projective geometry, in a form suitable for the honours degree specialist beginning a study of modern algebraic geometry. The exposition is austere lucid, and there are some reasonably searching exercises for the reader.
- KENNELLY, J. W. 427
Informal logic. Boston, Allyn & Bacon, 1967. viii, 134p, tables, diagrs, index, bibliog. \$2.95. *Allyn & Bacon series in topics in contemporary mathematics*. Paperback.
B An elementary analysis of symbolic logic with a mathematical orientation; the approach is informal and results are constructed in conjunction with mathematical concepts. Logic is used for an analysis of mathematical proofs rather than as a format for mathematics.
- MUELLER, F. J. 428
Contemporary algebra. Belmont (Calif.), Dickenson [distrib. by Prentice-Hall], [1967]. xi, 222p, diagrs, index. 48s.
B An introduction to algebra for the non-mathematician who requires functional competence in the subject. An illustrative problems and tangible applications approach is used to introduce the basic concepts of sets, functions and relations, number systems, and the algebra of polynomials. Exercises and answers to odd numbers are provided.
- SCHWARTZ, L. 429
Mathematics for the physical sciences. Paris, Hermann; London, Addison-Wesley, [1967]. 357p, diagrs, index. 94s. *Adiwes international series in mathematics*.
C A very rigorous account of certain topics of interest to physicists. These include distribution theory, topology, Hilbert space and Fourier transforms. The selection of material and the pure mathematical approach may restrict its use amongst undergraduates.
- 52 Astronomy. Surveying. Geodesy**
- BRAY, R. J. and LOUGHHEAD, R. E. 430
Solar granulation. C & H, 1967. xiv, 150p, plates, tables, diagrs, refs, indexes. 60s. *International astrophysics series*.
B This is a valuable contribution to the literature on the theory of convection in stars like the sun. The book contains a good account of the observational material, of the relevant hydrodynamical theory and of its application to the observed properties of solar granulation. The authors are on the staff of the National Standards Laboratory, Sydney, Australia.

53 Physics

ABRAHAM, R.

431

Foundations of mechanics. Written with the assistance of J. E. Marsden. NY, Amsterdam, Benjamin, 1967. ix, 296p, plates, diagrs, appendixes, index, bibliog. \$16.00. *Mathematical physics monograph series*.

C A modern, detailed treatise on the development and application of differential geometry and topology to stability problems arising in current research on the classical mechanical n -body problem, with particular reference to the restricted 3-body system. The subject is oriented towards graduate physicists and astronomers, who will find it a difficult challenge. Although contact with practical problems is seldom in evidence, the account is particularly interesting for the clear statements concerning the relations between mathematics, models and measure.

BROWN, S. C. *ed.*

432

Electrons, ions, and waves: selected works of William Phelps Allis. Cambridge (Mass.), London, MITP, ©1967. x, 442p, tables, diagrs, refs, indexes. \$20.00.

C Reprints of twenty papers by Professor Allis on plasma physics and electrical discharges in gases, previously published in various scientific journals between 1927 and 1965. In addition there is a long section on plasma theory, based on lecture notes given at MIT, not previously published.

DENNERY, P. and KRZYWICKI, A.

433

Mathematics for physicists. NY, Evanston, London, Harper & Row, ©1967. xiii, 384p, tables, diagrs, index, bibliog. 45s. *Harper's physics series*.

C A modern and authoritative account of various topics of interest to the theoretical physicist. These are analytic functions, linear vector spaces, function space and differential equations.

HAMEKA, H. F.

434

Introduction to quantum theory. NY, Evanston, London, Harper & Row, ©1967. x, 276p, tables, diagrs, appendixes, index. 45s.

B A clear, concise and well explained conventional undergraduate course covering basic postulates, Schrodinger's equation, matrix methods, operator concepts, variation and perturbation techniques and applications to hydrogen, helium and—via the Hartree-Fock equations—heavier atoms. There are useful problems throughout.

KACSER, C.

435

Introduction to the special theory of relativity. Englewood Cliffs (NJ), Prentice-Hall, ©1967. vii, 229p, tables, diagrs, index, bibliog. 1 *gn* paperback.

B An introduction to special relativity intended for non-specialists. The concepts are developed at some length, starting with a review of Newtonian concepts and showing their inadequacy in explaining the Michelson-Morley experiment. All standard relativity results are derived and many examples of their applications are given. Sixth-form algebra is adequate for most of the book but three appendixes are included which require a greater degree of sophistication. There is also a short chapter on general relativity.

POHL, H. A.

436

Quantum mechanics for science and engineering. Englewood Cliffs (NJ), Prentice-Hall, ©1967. viii, 115p, tables, diagrs, appendix, index. 44s cloth; 24s paper. *Prentice-Hall series in materials science*.

B An elementary introduction for non-specialists, which explains the basic physical principles of quantum mechanics with a minimum of mathematics. Includes an elementary and mainly qualitative treatment of atomic spectra, the periodic table, covalent bonds and band structure in solids. Clearly written and well illustrated.

POINTON, A. J.

437

Introduction to statistical physics for students. Longmans, 1967. xi, 202p, tables, diagrs, appendixes, index. 40s.

B A good clear introductory text for the undergraduate physics student. The first half deals with the basic classical and elementary quantum statistical mechanics, and the latter half with statistical thermodynamics up to the grand canonical ensemble. The numerous diagrams and calculations from data within the text add to its clarity.

537 Electricity

BURFOOT, J. C. 438

Ferroelectrics: an introduction to the physical principles. London, Toronto, [etc], Van Nostrand, ©1967. xi, 261p, plates, tables, diagrs, appendixes, index, bibliog. 65s.

B-C A clear and readable account of the underlying physical principles necessary for an understanding of ferroelectric phenomena. This book should appeal to postgraduate and senior undergraduate students of physics and physical chemistry who are about to embark on research in this subject. The emphasis throughout is illustrative rather than descriptive.

FATUZZO, E. and MERZ, W. J. 439

Ferroelectricity. Amsterdam, North-Holland, 1967. x, 289p, plates, tables, diagrs, refs, indexes. 70s. *Series of monographs on selected topics in solid state physics*.

C This book, which is primarily intended for those already possessing some knowledge of ferroelectricity, brings the reader up to date with the most recent developments. The authors, both eminent contributors to this subject, have concentrated their attention on a study of the phenomena in single crystals rather than on individual ferroelectric crystals.

GUGGENHEIM, E. A. 440

Thermodynamics: an advanced treatment for chemists and physicists. 5th ed. Amsterdam, North-Holland, 1967. xxiv, 390p, tables, diagrs, indexes. 86s.

C In this well known, comprehensive textbook the section on low temperature has been thoroughly revised, and additions include the onsager relations with thermoelectricity and for isothermodiffusion. A short chapter has been added on systems in motion treated according to the subject theory of relativity.

539.1 Nuclear Physics

ALDER, B., FERNBACH, S. and ROTENBERG, M. eds 441

Methods in computational physics: advances in research and applications; vol. 6, nuclear physics. NY, London, Academic P, [1967]. xiv, 303p, tables, diagrs, refs, indexes. 108s. [Vol. 4 revd January 1966 no. 8].

C Experts contribute articles on optical model calculations, many-body theory calculations, the matrix Hartee-Foch method, shell model calculations, and the determination of nucleon-nuclear phase shifts. The articles will prove most valuable to workers in low energy nuclear physics, but the article on phase shift analysis will be of some interest to workers in high energy particle physics.

54 Chemistry

BOCKRIS, J. O'M. and RAZUMNEY, G. A. 442

Fundamental aspects of electrocrystallization. NY, Plenum P, 1967. xii, 155p, plates, tables, diagrs, refs, index. \$7.50.

A-C A brief but clear outline and literature survey of deposition processes and crystal growth in electrodeposits. There are, especially, chapters on atomic movements, transient measurements, deposition and dissolution kinetics, dendritic growth, morphology, step-wise growth on faces, adsorption effects, and leveling and brightening. Good exposition of current new ideas and progress.

CARRINGTON, A. and McLACHLAN, A. D. 443

Introduction to magnetic resonance: with applications to chemistry and chemical physics. NY, Evanston, London, Harper & Row, ©1967. xix, 266p, tables, diagrs, appendixes, index, bibliog. 55s. *Harper's chemistry series*.

B-C A clear and authoritative account of a wide range of phenomena concerned with nuclear and electron spin resonance. It deals primarily with the interpretation of spectra in terms of the Hamiltonia, rather than with the choice of conditions (sweep rate etc) for obtaining spectra. The mathematics assumed, which is mainly concerned with matrix methods of quantum mechanics, would be possessed by many research students. The sections on double resonance techniques, and the extensive discussions of the e.s.r. of triplet states and of transition metal complexes are of particular interest.

- HESLOP, R. B. *and* ROBINSON, P. L. 444
Inorganic chemistry: a guide to advanced study. 3rd ed. Amsterdam, London, NY, Elsevier, 1967. viii, 774p, tables, diags, appendix, index. 65s.

B The new edition of this well known and popular undergraduate text has undergone extensive revision, and a good deal of material of lesser current importance has been omitted to make way for new sections which bring the text abreast with up-to-date ideas on the organization and presentation of the subject at first-degree level.

- PUNGOR, E. 445
Flame photometry theory. Tr. ed. R. A. Chalmers. London, NY, [etc], Van Nostrand, ©1967. x, 200p, plates, tables, diags, refs, index. 60s. *Van Nostrand series in analytical chemistry*.

C A very useful guide to the theory and practice of trace analysis by flame spectrophotometry. It gives an unusually thorough treatment in an area which is usually dealt with very empirically in the few books which have so far been published on this topic.

- ROSIN, J. 446
Reagent chemicals and standards: with methods of testing and assaying. 5th ed. Princeton (NJ), Toronto, London, Van Nostrand, ©1967. vii, 641p, tables, diags, index. 132s.

D The new edition contains specifications for an additional thirty reagents, bringing the total number to over six hundred, and adds flame photometry to the methods of testing. This well known American work is similar in nature to, but as a much more extensive coverage than, the British AnalR Standards, but unlike the latter does not relate to the products of specific manufacturers.

- WYATT, P. A. H. 447
Energy and entropy in chemistry. London, Macmillan; NY, St Martin's P, 1967. ix, 192p, tables, diags, index. 30s. *Topics in physics and chemistry*.

B This short text by a leading authority serves as an introduction to certain aspects of chemical thermodynamics and as a preliminary to advanced courses on statistical mechanics. It will be a valuable adjunct to pass degree and first- and second-year honours courses and other similar undergraduate levels.

549 Mineralogy

- GAY, P. 448
Introduction to crystal optics. Longmans, 1967. x, 262p, tables, diags, appendixes, index, bibliog. 2 gns.

B A most readable non-mathematical introduction to the study of the optical properties of transparent crystals, suitable for the undergraduate mineralogist. Refractive index measurements and interference phenomena using the polarizing microscope are well illustrated. A knowledge of geometrical crystallography is assumed and a simple mathematical analysis of the propagation of light through anisotropic media is given.

57 Anthropological and Biological Sciences

- CARPENTER, P. L. 449
Microbiology. 2nd ed. Philadelphia, London, Saunders, 1967. xii, 476p, plates, tables, diags, index. 52s 6d.

B A solidly written textbook covering most pure and applied aspects of microbiology. It is up to date, especially on bacterial structure and genetics. The illustrations are generally excellent but the space occupied by portraits of Pasteur and others might be redeployed. Although worthy of consideration for HNC, this book lacks the depth of treatment which is required for honours degree courses.

- DUNCAN, C. J. 450
Molecular properties and evolution of excitable cells. London, NY, [etc], Pergamon P, 1967. xi, 253p, table, diags, refs, indexes. 70s. *International series of monographs in pure and applied biology*.

C In this monograph the author seeks to establish a unifying concept for the action of nerve cells, which is based upon evolution from the primitive ATP-ATPase interaction as exemplified by the *Amoeba*. To obtain evidence for the support of this hypothesis, the current

literature on cation permeability and input systems, transducer mechanisms, cholinesterases, output systems, feedback, memory mechanisms and other allied topics has been widely reviewed. The text is clearly written and illustrated; the evidence is convincingly presented and should prove stimulating, as well as acting as a general guide to researchers in neurochemistry and related fields.

- EVANS, H. J., BROWN, W. M. C. and McLEAN, A. S. eds 451
Human radiation cytogenetics: proceedings of an International Symposium held in Edinburgh, 12-15 October 1966. Amsterdam, North-Holland, 1967. 218p, plates, tables, diagrs, refs. 70s.

C An authoritative series of research papers on chromosomal aberrations in human blood leukocytes. The induction of these abnormalities by irradiation of blood *in vitro* is dealt with in detail, as well as many *in vivo* studies of their frequency in exposed and unexposed groups. Technical problems are also discussed.

- PARSONS, P. A. 452
Genetic analysis of behaviour. Methuen, 1967. viii, 174p, tables, diagrs, refs, index. 30s. *Methuen's monographs on biological subjects*.

C Eight chapters beginning with discussions of traits largely controlled by single genes, leading to an analysis of quantitative behavioural characters and selection experiments, and ending with a chapter on behaviour and evolution. The main experimental materials considered are *Drosophila*, mouse and rat and there is a useful chapter on the genetics of certain behavioural aspects of man.

58 Botany

- FAHN, A. 453
Plant anatomy. Tr. from the Hebrew by S. Broido-Altman. London, NY, [etc], Pergamon P, 1967. viii, 534p, plates, diagrs, refs, indexes. 75s.

B This is a most comprehensive review of a subject fundamental in the teaching of botany, and the author has provided for students an attractive though expensive volume.

6 APPLIED SCIENCES

621 Mechanical and Electrical Engineering

- PALLU DE LA BARRIERE, R. 454
Optimal control theory: a course in automatic control theory. Tr. by Scripta Technica, ed. by B. R. Gelbaum. Philadelphia, London, Saunders, 1967. xii, 412p, tables, diagrs, index, bibliog. 56s. *Saunders mathematics books*.

C This is the most comprehensive book on control theory available. Written by a mathematician, it is rigorous, highly condensed and demands advanced mathematical background. The first part gives a rapid and concise presentation of the theory of distributions, Fourier and Laplace transforms, probability, Markov chains and random processes. Chapters 8-10 deal with classical linear control theory, filtering and prediction, and discrete time systems. Chapters 12-14 are an introduction to mathematical programming, and chapters 15-18 an introduction to modern control theory (dynamic programming, Markov control systems, minimum time control and the maximum principle).

621.3 Electrical Engineering

- DUFTON, R. ed. 455
Proceedings of the International Conference on Sensory Devices for the Blind. St Dunstan's, ©1967. xii, 477p, plates, tables, diagrs, refs, appendixes. 50s.

B This book, through the papers given at the conference and the discussions arising, gives an up-to-date and authoritative account of the technical details for a vast range of devices to aid the blind in the problems of mobility and reading, and of the problems of using and testing such devices. Particular emphasis falls on the results of widespread testing of an ultrasonic mobility device.

- JAIN, G. C. 456
Properties of electrical engineering materials. NY, Evanston, London, Harper & Row, ©1967. xii, 381p, diagrs, index, bibliog. 45s. *Harper's series in electrical engineering*.

B This book is concerned mainly with the fundamental classical and wave mechanical physical theories underlying the behaviour of atoms, electrons and holes in metals, semi-conductors and insulators, with particular reference to thermionics, electrical and thermal conduction, magnetism, dielectric theory and, briefly, quantum optics. The presentation is clear and concise, but the contents might have been described more aptly as solid-state physics for electrical engineering undergraduates.

621.7 Workshop Practice

PATTON, W. J.

457

Science and practice of welding. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xviii, 524p, plates, tables, diagrs, index. 96s.

A A good introduction to the subject at technical college level. Attempts have been made to cover all aspects of welding technology but there is a lack of cohesion. There are a number of errors in the text and electron beam welding is over-emphasized in the context of the book. Unfortunately no references are given.

624 Structural Engineering

BROWN, E. H.

458

Structural analysis, vol. 1. Longmans, 1967. x, 398p, tables, diagrs, appendix, index. 50s.

B A valuable introductory text on structural analysis for first-year university students. The subject of analysis is introduced by way of statics and the mechanical properties of materials. The volume continues with sections on reinforced and prestressed concrete, compatibility and virtual work. The text is well written, well illustrated, and supported by numerous examples and problems.

66 Chemical Technology

AMERICAN CHEMICAL SOCIETY

459

Radiation preservation of foods: a symposium co-sponsored by the Division of Agricultural and Food Chemistry and the Division of Nuclear Chemistry and Technology at the 150th Meeting of the Society, Atlantic City (NJ), September 16-17 1965. Washington (DC), the Society, 1967. viii, 184p, plates, tables, diagrs, refs, index. \$7.00. *Advances in chemistry series*, 65.

C Comprises fifteen papers by different authors, with emphasis on the chemistry and technology of food irradiation. Although some experimental work is reported, the book is of more value as a review of the fields covered. The most useful papers are those dealing with the effect of radiation on meat and meat components, fresh fruit and vegetables, the induction of radioactivity by high energy radiation and the design and economics of irradiation facilities. Except for induced radioactivity, wholesomeness is not considered.

PRÄUSNITZ, J. M. and others

460

Computer calculations for multicomponent vapor-liquid equilibria. By J. M. Prausnitz, C. A. Eckert, R. V. Orye and J. P. O'Connell. Englewood Cliffs (NJ), Prentice-Hall, ©1967. ix, 238p, tables, diagrs, refs, appendixes, index. 100s. *Prentice-Hall international series in the physical and chemical engineering sciences*.

C The first four chapters summarize the thermodynamic relations relevant to phase equilibrium and briefly review the various empirical relations which have been proposed for describing departures from ideality in both liquid and vapour phases. The remainder of the book describes computer programmes for least-squares fitting of parameters in these relations, and in vapour-pressure equations, and programmes which use the relations to predict multicomponent phase equilibrium conditions. The listing of the programmes in FORTRAN II is given in an appendix together with a discussion on experience in their use, and a second appendix lists the fitted parameters for a wide range of systems.

666 Glass and ceramic industries

RAWSON, H.

461

Inorganic glass-forming systems. London, NY, Academic P, 1967. xii, 317p, plates, tables, diagrs, refs, indexes. 80s. *Non-metallic solids, a series of monographs*.

B The book provides a comprehensive review of experimental studies carried out in glass forming systems. It should be of particular value to materials technologists interested in the development of new glasses. Particular attention is devoted to the more unusual systems such as the chalcogenide or halide glasses, detailed knowledge of which has become available only in comparatively recent years.

669 Metallurgy

JACKSON, A.

462

Modern steelmaking for steelmakers. Revised ed. Newnes, 1967. xii, 323p, plates, tables, diagrs, appendixes, index. 70s. [First pub. as *Steelmaking for steelmakers*, 1960.]

B The speed with which change has occurred in steelmaking processes is reflected in the very considerable rewriting and revision of this edition. The treatment is similarly of a qualitative technical form, and is aimed at both technical and non-technical staff in the iron and steel industry. The wealth of practical information provided from first-hand experience by the author makes it equally useful as a complement for more scientifically based university texts.

67/68 Manufactures

ALLEN, P. W., LINDLEY, P. B. and PAYNE, A. R. eds

463

Use of rubber in engineering. Proceedings of a conference held at Imperial College of Science and Technology, London, 1966. MacLaren, for the Natural Rubber Producers' Research Association, ©1967. x, 275p, plates, tables, diagrs, refs, indexes. 3 gns.

C An up-to-date review of the use of rubber in engineering which brings together the work of the rubber technologist and that of the civil and mechanical engineer. Invaluable case histories enhance this practical book, which includes eighteen chapters on specialized topics and a discussion on specifications.

BRYDSON, J. A. ed.

464

Developments with natural rubber. MacLaren, 1967. ix, 148p, plates, tables, diagrs, refs, index. 2 gns.

C This is a report of a symposium which was held at the National College of Rubber Technology in June 1966. Recent work is reviewed with discussions on economics and marketing of natural rubber, its preparation, oil-extension, preservation of vulcanizates, advances in vulcanization, compounding for selected applications, assessment of wear and skid resistance, and the use and limitations of natural rubber compounds in recently developed processes.

DERRETT-SMITH, D. A. and GRAY, J.

465

Identification of vat dyes on cellulosic materials. London, NY, [etc], Pergamon P, 1967. v, 113p, tables, refs, index. 35s.

B-C Information previously published in the *Journal of the Society of Dyers and Colourists* (1940, 56, 97; 1947, 63, 401; 1956, 72, 211) has been revised and now appears in book form. It relates, comprehensively, to British, German and Swiss vat dyes. Their colour changes (as dyeings on cotton, linen and rayon) to five reagents are tabulated to provide a rapid sorting out test. Tests for a preliminary identification of different dye classes (including reactive dyes) and additional tests for certain black and blue dyes (the only ones not completely distinguished by the main scheme) are also given, and there is an alphabetical index of the vat dyes. A useful compilation.

GARNER, W.

466

Textile laboratory manual; vol. 5, fibres; vol. 6, additional methods. 3rd ed. London, Heywood Books; NY, American Elsevier, 1967. 12, 265p; 12, 233p, tables, diagrs, refs, appendixes, indexes. 45s; 47s 6d. [Vols 3 & 4 revd May 1967 no. 256.]

B-C These volumes complete the new edition. Vol. 5 deals particularly with methods for identification and analysis of wool and hair, vegetable, silk and man-made fibres. Vol. 6 deals with moisture relations, strength testing, yarn and fabric properties, biological, optical, viscosity and statistical methods, and fitness for purpose. Collectively useful.

KÖRNER, R.

467

Technical dictionary of textile finishing. Comp. with the cooperation of P. W.

Moryganow, B. N. Melnikow and W. G. Radugin. London, Pergamon P; Berlin, VEB Verlag, [1967]. 1022p. 200s.

D Some eleven thousand terms relating to bleaching, dyeing and finishing processes, laundering and dry-cleaning, chemicals and machines, as well as fibres, yarns and fabrics, are presented side by side in four languages (English, German, French, Russian) and in four sections with the terms in each language in alphabetical order in the first column. Some of the English can be criticized, but this is a useful compilation.

681 *Precision Mechanisms*

BRADBURY, S.

468

Evolution of the microscope. London, NY, [etc], Pergamon P, 1967. x,357p, plates, tables, diagrs, refs, indexes. 80s.

A In this very readable history, which ends with an extensive section on the electron microscope, Dr Bradbury does not confine himself to the mechanical and optical developments of the instrument but mentions also the biological researches made possible by them. No mathematical demands are made on the reader and only a slight acquaintance with optics is assumed. There are over one hundred illustrations and no microscope is described in any detail without a supporting photograph or drawing.

THOMAS, H. E. and CLARKE, C. A.

469

Handbook of electronic instruments and measurement techniques. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xi,398p, plates, tables, diagrs, appendixes, index. 96s.

D A general philosophical introduction is followed by more detailed chapters on electrical meters, bridges, oscilloscopes, displays, frequency meters, phasemeters, timers, transducers, electronic voltmeters, and instrumentation for valves, transistors, diodes, receivers, transmitters, microwave equipment and radar. Appendixes range in sophistication from four-figure log tables to an account of r.f. power measurement. The book is less comprehensive than its title suggests, but the illustrations are good.

TIEDEMANN, A. T.

470

Elements of electrical measurements. Boston, Allyn & Bacon, ©1967. xi,166p, tables, diagrs, refs, index. \$4.95. *Allyn & Bacon series, topics in electrical engineering*. Paperback.

B An introductory text demanding nothing more specialized than a knowledge of electrical circuit theory. The author starts with an admirable thumbnail sketch of measurement at large. He then deals with the cathode ray oscilloscope, indicating instruments, balance methods for current and voltage, and impedance measurement. In all cases he dwells on principles and uses rather than the particularities of instruments and their electronic circuitry. There are problems and answers. Analogue computers and control systems have a chapter each at the end of the book. It is a pity the index is so rudimentary.

7 THE ARTS

71 *Physical planning*

BURNS, W.

471

Newcastle: a study in replanning at Newcastle upon Tyne. Leonard Hill, 1967. vii,96p, illus, plates. 35s.

A This very attractively produced volume is a personal review by the city planning officer of Newcastle upon Tyne of the progress in planning developments in the city and some of the basic philosophies behind the planning. The work is very fully illustrated with photographs, drawings and maps and as an account of a particularly ambitious scheme of urban renewal should interest all town planners and architects.

DENMAN, D. R., ROBERTS, R. A. and SMITH, H. J. F.

472

Commons and village greens: a study in land use, conservation and management based on a national survey of commons in England and Wales 1961-1966, financed by the Nuffield Foundation. Leonard Hill, 1967. xiv,512p, plates, tables, appendixes, index. 7 gns.

B After the Commons Registration Act 1966, will come the formation of management committees and the making and implementation of management plans. A survey and field studies financed by the Nuffield Foundation Trustees have resulted in a basic classification and a comprehensive guide to the considerations which influence management. A very readable manual for management committees.

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3 SOCIAL SCIENCES

31 Statistics

SHAPIRO, J. M. and WHITNEY, D. R.

473

Elementary analysis and statistics: mathematics for administrative, behavioral, and biological sciences. Ohio, Merrill [distrib. by Prentice-Hall], ©1967. xiv, 704p, tables, diagrs, index. 88s. *Merrill mathematics series*.

B This is a substantial book and reasonably priced for its size and content. It is designed for those with slender mathematical attainments who need to use a numerical approach to the material and human problems of administration and management. Chapters dealing with basic mathematics, descriptive statistics and statistical inference as a basis for decision taking are interspersed in a way which is unusual and which many will find helpful. The numerous sets of problems with answers would be valuable for the student who is preparing himself for an examination in statistical methods.

5 MATHEMATICS AND NATURAL SCIENCES

51 Mathematics

ERWE, F.

474

Differential and integral calculus. Tr. by B. Fishel. Edinburgh, London, O & B, 1967. x, 494p, diagrs, index. 57s 6d.

B *Differential- und Integralrechnung* was first published in 1962 and this is a translation of the second edition. The subject is treated very thoroughly. It is intended that the student be led into a more advanced understanding of the subject by the use of more varied sources than is usual in textbooks on this subject.

GEMIGNANI, M. C.

475

Elementary topology. Reading (Mass.), London, [etc], Addison-Wesley, ©1967. xi, 258p, diagrs, appendix, indexes. 53s. *Addison-Wesley series in mathematics*.

B A student text by an American author with a dichotomous approach based where applicable on the geometric and on the analytic. The eleven chapters lead the reader from fundamental considerations to an introduction to homotopy theory. The book is well produced and each section has exercises.

GOLDSTEIN, A. A.

476

Constructive real analysis. NY, Evanston, London, Harper & Row, ©1967. xii, 178p, diagrs, index, bibliog. 55s. *Harper's series in modern mathematics*.

B-C This book discusses that part of constructive function-theory dealing with the theoretical bases of algorithms for finding the roots of equations and sets of equations, and the related extremal problems for functions in finite or infinite dimensional spaces. Work on convex programming is included, and the book may serve as an introduction to applied functional analysis. A few useful exercises are given, some of which can be answered by a computer. A sound knowledge of mathematical analysis at undergraduate level is presupposed.

HUMMEL, J. A.

477

Introduction to vector functions. Reading (Mass.), London, [etc], Addison-Wesley, ©1967. x, 372p, diagrs, index. 53s. *Addison-Wesley series in mathematics*.

B Present-day science and engineering students need some knowledge of linear algebra, matrices and vector spaces. This undergraduate text, culminating in a rigorous treatment of vector analysis and the Gauss-Stokes theorems, contains such material in a somewhat austere and non-motivated fashion. If the young engineer can digest it, he will ultimately profit by acquiring an understanding of important modern mathematical techniques.

KILMISTER, C. W.

478

Language, logic and mathematics. EUP, 1967. 124p, tables, diagrs, index. 25s. *New science series*.

A-B The concept of decidability is the focus for this very good introduction to the basic ideas of mathematical logic. Intended for the non-specialist, the book first considers 'trivial' systems (i.e. those for which decision procedures exist) such as Greek logic, Boolean logic and

the logic of *Principia mathematica*. A study of Hilbert's meta-mathematics and Gödel's proofs then introduces the idea of undecidable-systems, and the proposed identity of decidability and computability (Church's thesis) leads to a discussion of Turing machines.

RANDOLPH, J. F.

479

Calculus: analytic geometry, vectors. Belmont (Calif.), Dickenson [distrib. by Prentice-Hall], ©1967. xi, 681p, tables, diagrs, index. 88s.

B Vectors are used to introduce the student to a number of the concepts of analytic geometry and of the calculus. The treatment is initially on a descriptive level and rigour is gradually increased to match the development of the student. Unlike many recent texts, Boolean algebra is not employed. The scope includes multiple integrals (to triple integrals), Taylor's expansion in two variables and basic differential equations. The subject is well and agreeably presented, and numerous exercises, with answers, are given.

RÉDEI, L.

480

Algebra; vol. 1. London, NY, [etc], Pergamon P, 1967. xviii, 823p, tables, index, bibliog. 140s. *International series of monographs in pure and applied mathematics*.

C This translation gives a comprehensive account of the fundamental structures of modern algebra. The first volume contains general work on sets with laws of composition, and then deals with special structures such as groups, rings and fields. The book ends with a discussion of fields with valuation and the Galois theory. No previous knowledge of modern algebra is required. The sophisticated honours student specializing in algebra will find this an up-to-date and very detailed text and an invaluable work of reference.

ROOM, T. G. and MACK, J. M.

481

Sorting process: a study in mathematical structure. Sydney, SUP; London, Methuen, 1966. ix, 235p, tables, diagrs, appendix, index. 24s. Paperback.

A-B The first four chapters are an excellent introduction to ideas of sets and elementary Boolean algebra, which should be especially useful for teachers and the lone student. There is too big a jump in subject matter and exposition method after chapter 4, but the last two chapters are useful background reading for those able to meet these demands. The notation is good and there is a useful set of answers to some of the exercises.

THOMAS, G. B. Jr, MOULTON, J. K. and ZELINKA, M.

482

Elementary calculus from an advanced viewpoint. Reading (Mass.), London, [etc], Addison-Wesley, ©1967. ix, 338p, tables, diagrs, index. 51s.

B This book falls between elementary and advanced calculus course standards. It may be found useful as a supplement to a first course in calculus, as a reference for teachers or as a reference for advanced students. The aim is to begin with familiar elementary concepts and then show the immediate supporting theory. The use of calculus for finding the slope of a curve leads to a study of limits, then to maxima and minima, continuity, differentiation, integration and logarithmic and exponential functions. Exercises and answers are provided.

WHITE, P. A.

483

Linear algebra. Belmont (Calif.), Dickenson [distrib. by Prentice-Hall], [1967]. x, 323p, diagrs, index. 68s.

B This book is suitable for first-year university work. It utilizes the definition-theorem-proof approach and gives an insight into the mathematical structure of linear algebra. Two and three dimensional vector algebra provides a background to the generalization to *n*-dimensions. Determinant theory is treated axiomatically, and the concepts of matrices and linear transformations are discussed. Exercises and answers to odd numbers are given.

53 Physics

AKHIEZER, A. I. and others

484

Collective oscillations in a plasma. By A. I. Akhiezer, I. A. Akhiezer, R. V. Polovin, A. G. Sitenko and K. N. Stepanov. Tr. by H. S. H. Massey, ed. by R. J. Tayler. London, NY, [etc], Pergamon P, 1967. x, 190p, tables, diagrs, index, bibliog. 45s. *International series of monographs in natural philosophy*.

C The propagation and damping of waves in a uniform collisionless plasma is investigated in considerable detail. A chapter is given to beam-plasma instability and some well known stability criteria are explained. Although absolute and convective instabilities are distinguished it is a pity that the elegant criteria of Bers and Briggs are omitted. The last seventy pages contain the derivation of plasma fluctuation-spectra and the associated topic

of wave scattering. The experimental research worker could use this book as a source for detailed formulae. The theoretician will appreciate the clarity of the mathematics used.

BLITZ, J.

485

Fundamentals of ultrasonics. 2nd ed. Butterworths, 1967. x, 220p, plates, tables, diags, refs, index. 38s.

B This book is intended as an introduction to the subject and deals mainly with physical aspects. It covers relevant acoustic wave theory, methods of producing and detecting ultrasonics and the applications of both low and high power ultrasonic waves. It should be particularly useful to the non-expert user of ultrasonic techniques.

BROWN, S. C.

486

Basic data of plasma physics, 1966. 2nd ed. Cambridge (Mass.), London, MITP, ©1967. viii, 312p, diags, indexes. \$8.50.

D Data on elastic, charge-transfer and inelastic collisions, attachment, detachment and recombination and on mobilities, made by a computer program which can update the book in future.

GRYZ, B.

487

Fourth state of matter. London, Iliffe; Prague, SNTL, 1966. 120p, plates, tables, diags, index. 15s. *Physics paperbacks*.

B An introduction for undergraduates to plasma physics. The presentation of the subject is self-contained and concise, yet elementary. There is a useful section dealing with fundamentals and the last part of the book is devoted to applications of plasma physics.

van HEEL, A. C. S. *ed.*

488

Advanced optical techniques. Amsterdam, North-Holland, 1967. x, 678p, plates, tables, diags, refs, indexes. 216s.

B-C This book contains eighteen contributions by eminent authors on many of the modern developments in optics, including lasers, optical materials, lens design, thin films, transfer functions, coherence and interferometry. It bridges the gap between the standard textbook and current literature and can be recommended as a reference book for both the physicist and the engineer.

PIRENNE, M. H.

489

Vision and the eye. 2nd ed. London, C & H; NY, Barnes & Noble, 1967. xvi, 224p, plates, diags, refs, index. 50s cloth; 25s paperback.

B An excellent introduction to the main psychophysical, biophysical and physiological aspects of vision. Aesthetic and philosophical considerations are well covered, and the historical background is emphasized sometimes to the detriment of the coverage of modern developments in vision. The chapters on colour and colour vision are not up to the standard of the rest of the book.

THEWLIS, J. *ed. in chief*

490

Encyclopaedic dictionary of physics, supplementary volume 2: general, nuclear, solid state, molecular, chemical, metal and vacuum physics, astronomy, geophysics, biophysics and related subjects. Assoc. eds R. C. Glass and A. R. Meetham. London, NY, [etc], Pergamon P, 1967. xiii, 447p, plates, tables, diags, index, bibliog. 140s.

D This second supplement contains some 150 illustrated signed articles for topics of recent development, arranged alphabetically. These include NSR, NMR, lasers, ultrasonic machining, computers and thin films. Most of the entries end with brief bibliographies.

539.1 Nuclear Physics

KVASNICA, J.

491

Structure of the atomic nucleus. Tr. ed. by A. Thomas-Betts. London, Iliffe; Prague, SNTL, 1967. 121p, tables, diags, index. 15s. *Physics paperbacks*.

B This is an elementary but comprehensive and well explained text on nuclear theory. It describes quantum theory and relativity and basic properties of nuclei such as charge mass and spin. The meson theory of nuclear forces and models such as liquid drop, shell and Brückner's are discussed. Alpha, beta and gamma decay and the fascinating fission process are explained.

PREIST, T. W. and VICK, L. L. J. eds

492

Particle interactions at high energies: Scottish Universities' Summer School 1966. Edinburgh, London, O & B, 1967. xiii, 406p, tables, diags, refs, bibliog. 6 gns.

B-C Contains papers on selected topics in the field of high energy physics. The topics covered are: high energy scattering; features of electromagnetic interactions; tests of quantum electrodynamics; symmetries of the weak interaction; vector current algebra; pion-nucleon phase shift analysis; and quark models. All chapters contain copious references up to 1966.

54 Chemistry

AMERICAN CHEMICAL SOCIETY

493

Nucleation phenomena: a symposium sponsored by Industrial and Engineering Chemistry and the Division of Industrial and Engineering Chemistry of the American Chemical Society, Washington DC, June 21-22 1965. Washington (DC), the Society, ©1966. vii, 89p, plates, tables, diags, refs, index. \$5.75.

B Eight review papers read at a symposium and published in *Industrial and Engineering Chemistry* from September 1965 to April 1966 are reproduced and provided with an index. The reviews are not exhaustive and the degree of penetration varies, but they cover the recent published work with sufficient background to be useful as introductory reading for students and research workers.

BUTLIN, A. G., D'OYLY-WATKINS, C. and KNAPMAN, C. E. H. comps.

494

Gas chromatography abstracts: cumulative indexes 1958-1963 inclusive. Sponsored by the Gas Chromatography Discussion Group of the Institute of Petroleum. The Institute, [1967]. 311p, indexes. 3 gns.

D Cumulative author and subject indexes to the six annual volumes of *Gas Chromatography Abstracts* 1958-1963. The subject index is very detailed and could provide the basis for a library or personal index in the field.

FINAR, I. L.

495

Organic chemistry; vol. 1, fundamental principles. 5th ed. Longmans, 1967. xiv, 906p, tables, diags, refs, index. 60s.

B This textbook provides the material required for Part 1 of a Special Degree in chemistry or equivalent. The structure of the book is unchanged, but the results of much recent work are included, and the treatment of theoretical aspects has been expanded. The emphasis continues to be on reactions and reaction conditions. Although more attention is now given to physical methods, mass spectrometry deserves more detailed treatment.

GALWEY, A. K.

496

Chemistry of solids: an introduction to the chemistry of solids and solid surfaces. London, C & H; NY, Barnes & Noble, 1967. ix, 210p, plate, tables, diags, index, bibliog. 50s cloth; 28s paperback.

B Material which is usually widely dispersed in more general texts is collected together in one volume which will be suitable for all undergraduate courses on crystal chemistry and similar topics. A clear and simple account is given of the classification of solids, the crystal lattice, bond theory, defects, the chemistry of surfaces and the reactions of solids.

GOLD, V. ed.

497

Advances in physical organic chemistry, vol. 5. London, NY, Academic P, 1967. x, 418p, tables, diags, refs, indexes. 120s. [Vol. 3 revd December 1965 no. 612.]

C Six articles by well-known authorities provide valuable documented introductions to the topics described. Three deal with the application of special techniques: polarography applied to kinetics, e.s.r. applied to the study of shortlived radicals and heat capacities of activation as applied to mechanistic studies. The others describe the effects of solvents on the rates of bimolecular substitution reactions, general base and nucleophilic catalysis and the reactions of aliphatic diazocompounds with acids.

KNAPMAN, C. E. H. ed.

498

Gas chromatography abstracts 1966. Asst eds D. R. Browning and S. G. Perry.

Sponsored by the Gas Chromatography Discussion Group of the Institute of Petroleum. The Institute, 1967. xi,315p, tables, indexes. 3 *gns.* [1965 issue revd August 1966 no. 373.]

D This volume contains twelve hundred references to the literature of gas chromatography, with brief abstracts. As before, the title is misleading in that the majority of references are to the literature of 1965 and earlier years. The general form of the index is the same as for earlier volumes, but there has been some revision of the subject index headings.

MELLOR, J. W.

499

Supplement to Mellor's comprehensive treatise on inorganic and theoretical chemistry; vol. VIII, supplement II nitrogen (part II). Longmans, 1967. x,676p, tables, diags, refs, index. 400s.

C This second supplementary volume on nitrogen covers a number of compounds such as hydrogen azide, hydrazine and hydroxylamine, the oxides, oxy-acids and halides of nitrogen, and the isotopy, spectroscopy and radiation chemistry of nitrogen. There is also a long final chapter on the analytical chemistry of the element and its compounds. The contributions are authoritative and each section of each chapter is very liberally provided with references to the literature of the subject.

PORTER, G. *ed.*

500

Progress in reaction kinetics, vol. 4. Asst eds K. F. Jennings and B. Stevens. London, NY, [etc], Pergamon P, 1967. vii,523p, tables, diags, refs, indexes. 100s.

C The high standard of previous volumes is maintained by the ten authoritative articles which are of particular interest to postgraduate research workers and lecturers. Topics include the gas phase reactions of nitrogen atoms, details of the reactions of halogenmethyl and of alkoxy radicals, molecular reactions in the gas phase, the role of the solvent in aqueous proton transfer, and the kinetics of electrode processes. Four articles deal with electronically excited states: gas phase photochemistry of carbonyl compounds, radiationless energy transfer, fluorescence lifetime of aromatic molecules and chemiluminescence in liquid-phase reactions.

WHISTLER, R. L. *and* PASCHALL, E. F. *eds*

501

Starch: chemistry and technology; vol. II, industrial aspects. Asst eds J. N. Bemiller and H. J. Roberts. NY, London, Academic P, 1967. xviii,733p, plates, tables, diags, refs, indexes. 240s. [Vol. I revd April 1966 no. 176.]

C This is a comprehensive survey of the practical aspects of starch chemistry. Primarily it is for those who are concerned with the manufacture and use of starches and modified starch products, but it should also interest chemists concerned with starch reactions. The manufacture of commercially important starches; the uses of starches in the paper, textile and food industries; manufacture and use of starch derivatives; and the analysis, identification and microscopy of starches are the topics covered. There are thirty-five contributors (mainly from industry) and the book is clearly presented, excellently illustrated and extensively documented.

57 Anthropological and Biological Sciences

BROWN, W. M. COURT

502

Human population cytogenetics. Amsterdam, North-Holland, 1967. xii,107p, plates, tables, refs, indexes. 40s. *North-Holland research monographs, frontiers of biology.*

C An excellent account of the frequency and distribution of the major autosome and sex chromosome anomalies throughout a general population. The four chapters deal with general population studies, chromatin-positive males, the Y chromosome and structural heterozygosity of autosomes. A brief account of blood culture and cytological methods is included together with summaries after each chapter.

HUMASON, G. L.

503

Animal tissue techniques. 2nd ed. San Francisco, London, Freeman, ©1967. ix,569p, tables, diags, refs, index. 72s. *Series of books in biology.*

B A comprehensive textbook setting out in easy-to-follow steps the techniques used in general histology, especially for light microscopy. Colour reactions of cellular components in specific methods are emphasized rather than chemical interpretations. Specialized tech-

niques such as those in use for electron microscopy and immunology are dealt with only briefly.

577.1 Biochemistry

CAMPBELL, P. N. and SARGENT, J. R. eds

504

Techniques in protein biosynthesis, vol. 1. London, NY, Academic P, ©1967. xii, 336p, plates, tables, diagrs, refs, appendix, indexes. 80s.

C The first volume of this series deals with the methodological aspects of protein synthesis and also biosynthesis of specific proteins in a number of mammalian tissues, the biochemistry of the genetic code and isolation of ribonucleic acids for studies in protein biosynthesis. Each chapter reviews the methods and techniques at present available for investigations into the branch of the subject discussed; the texts are well written, by specialists in the various fields, and adequately illustrated. A long first chapter, in which the present state of knowledge of protein synthesis is summarized, introduces the series. This and subsequent volumes should prove of value for research and reference in many areas of biochemistry.

58 Botany

HUTCHINSON, J.

505

Key to the families of flowering plants of the world: revised and enlarged for use as a supplement to *Genera of flowering plants*. OUP, 1967. 117p, diagrs, glossary. 30s hard; 18s paper.

A This will be an indispensable manual for use throughout the world in determining the family of any wild or cultivated flowering plants.

59 Zoology

CLARK, L. R. and others

506

Ecology of insect populations in theory and practice. By L. R. Clark, P. W. Geier, R. D. Hughes and R. F. Morris. London, Methuen; NY, Barnes & Noble, 1967. xiii, 232p, tables, diagrs, indexes, bibliog. 45s.

B-C This book is of interest to both ecologists and economic entomologists. It sets out concisely the development of ecological principles underlying the studies of insect populations. All populations are viewed as parts of 'life systems' in which the subject population is an integral part of its effective environment. Unfortunately, not enough stress is laid on the importance of life tables.

SIMKISS, K.

507

Calcium in reproductive physiology: a comparative study of vertebrates. London, C & H; NY, Reinhold, 1967. xiv, 264p, plates, tables, diagrs, refs, index. 60s. *Modern biological studies*.

C A well written and stimulating book with a good bibliography and index. Approximately one-third of the text is devoted to the physiology of bone and other organs concerned with calcium metabolism. The remainder deals with calcium metabolism in pregnancy and lactation in mammals, in the laying bird and embryo, in reproducing reptiles and embryos, and in adult and larval amphibians.

6 APPLIED SCIENCES

NEWBY, F.

508

How to find out about patents. NY, London, [etc], Pergamon P, 1967. xi, 177p, illus, appendix, index, bibliog. 30s; 1 gn paper. *Commonwealth and international library of science, technology, engineering and liberal studies*.

D An account mainly of British patents, emphasizing the sources and practical use of various types of information likely to be required in the course of applications and searches. There are brief notes on foreign official patent publications, and useful lists of British and foreign specifications and other patent literature held by the Patent Office library, holdings of specifications in provincial libraries, and non-official patent abstracts (by subject).

62 Engineering and Technology

POTTER, J. H. ed.

509

Handbook of the engineering sciences; vol. I, basic sciences. Princeton (NJ), London, [etc], Van Nostrand, ©1967. xv, 1347p, plates, tables, diagrs, refs, index. 270s.

D This volume aims to present the fundamental considerations of the engineering sciences 'on a level approximating that of the first-year graduate student in engineering'. The material is presented in seven sections: mathematics, physics, chemistry, graphics, statistics, theory of experiments and mechanics. With thirty-four contributors, the level of treatment is inevitably uneven, as is the provision of bibliographical references. Nevertheless there is an enormous amount of useful and succinctly presented basic scientific knowledge which should prove valuable as a work of reference to engineers and scientists in many fields and at varying levels.

621.3 *Electrical Engineering*

COOK, C. E. and BERNFELD, M. 510

Radar signals: an introduction to theory and application. NY, London, Academic P, 1967. xvi, 531p, plates, tables, diagrs, refs, indexes, bibliog. 156s. *Electrical science series*.

C A comprehensive description of the basic theory and engineering principles involved in the generation and detection of radar signals. Much of the relevant material which has been published during the last few years is presented in a unified treatment. The book should be very useful not only to radar systems engineers but also to those communication engineers whose general interest is in the generation and detection of sophisticated wide-band signals.

PRATHER, R. E. 511

Introduction to switching theory: a mathematical approach. Boston (Mass.), Allyn & Bacon, ©1967. xv, 474p, tables, diagrs, appendix, index. \$11.95. *Allyn & Bacon series in electrical engineering*.

C An algebraic treatment of selected topics in switching theory. Boolean algebra and sequential machine theory are the basic subjects, with minimization and decomposition aspects explained by use of the geometry of the *n*-dimensional cube and of tree structures. The material is carefully written, although the numbering of paragraphs is confusing.

RCE, P. H. O'N. 512

Networks and systems. Reading (Mass.), London, Addison-Wesley, ©1966. xiii, 336p, tables, diagrs, refs, appendixes, index, bibliog. 94s. *Addison-Wesley series in electrical engineering*.

B The stated concern of this book is the analysis of physical systems described by linear algebraic and differential equations, but there is a very heavy emphasis on electrical networks. Early chapters on the topological basis for the selection of independent variables, the formulation of equilibrium equations and their solution are followed by a treatment of the state-space description of electric networks. A final chapter considers mechanical, hydraulic and mixed systems.

STEIN, S. and JONES, J. J. 513

Modern communication principles: with application to digital signaling. NY, London, [etc], McGraw Hill, ©1967. ix, 382p, diagrs, refs, index. 120s.

B A mathematical introduction to digitally encoded (quantized) signalling systems including both binary and multilevel systems. A number of introductory chapters cover the basic mathematics and the more conventional modulation systems and the book is sufficiently self-contained to be used by engineers and students with little more than a working knowledge of calculus.

624 *Structural Engineering*

DURELLI, A. J. 514

Applied stress analysis. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xvi, 180p, plates, diagrs, index. 96s. *Civil engineering and engineering mechanics series*.

B Most of this volume is devoted to case studies of the stresses in configurations of interest to mechanical and civil engineers. The principles of the more common methods of experimental stress analysis such as photoelasticity, moiré fringe techniques, brittle coatings and strain gauges are reviewed. The approach throughout is practical.

YUAN, S. W. 515

Foundations of fluid mechanics. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xxii, 608p, tables, diagrs, refs, index. 104s. *Civil engineering and engineering mechanics series*.

B An excellent introductory text on basic fluid mechanics for engineering and science students, dealing comprehensively with problems of fluid statics, kinematics, thermodynamics, and the dynamics of inviscid and viscous fluids for compressible as well as incompressible flow. The text is well presented and illustrated by worked examples.

628 *Public Health Engineering*

PASSWATER, R. A.

516

Guide to fluorescence literature. Assisted by J. G. Bennett and B. G. Passwater. NY, Plenum P, 1967. 367p, indexes. \$19.50.

D Over 4,800 references are given to the literature of fluorescence and related topics appearing in the period 1950 to 1964. The main arrangement is chronological, beginning with the 1950 references, and within each year the arrangement is alphabetical by author. In nearly all cases the appropriate *Chemical Abstracts* reference is given. There is a useful detailed subject index.

63 *Agriculture. Forestry. Livestock. Fisheries*

MORTON, R. A. and AMOROSO, E. C. eds

517

Protein utilization by poultry: British Egg Marketing Board symposium, no. 2. Edinburgh, London, O & B, 1967. xii, 215p, tables, diagrs, refs, indexes. 90s.

C A series of papers on the amino acid requirements of poultry and the evaluation of commercial and artificial feedstuffs in terms of their requirements. Since both the biological value of a protein and the amino acid needs of poultry depend on a complex of variables, the book can only attempt to explore and explain the difficulties of such determinations; but within these limitations it is a comprehensive and clear-sighted review.

65 *Business Techniques. Management*

518

WHO OWNS WHOM (UK ed.): a directory of parent, associate and subsidiary companies. 10th ed. Comp. and pub. by O. W. Roskill, 1967. vii, 1539p, appendixes. 190s. [9th ed. revd September 1966 no. 447.]

D This edition contains seventy thousand entries with a further increase in the coverage of private companies. As in previous years, four quarterly supplements are offered at 20s the set.

67/68 *Manufactures*

BOOTH, L. G. and REECE, P. O.

519

Structural use of timber: a commentary on the British Standard Code of Practice CP 112. London, Spon; NY, Barnes & Noble, 1967. xvi, 287p, plates, tables, diagrs, refs, appendixes, indexes. 60s.

C The object of this book is to aid the engineer in the design of wood structures by enabling him to deal with problems not precisely covered by the clauses of the Code. It should also help the timber engineer to interpret and apply the many clauses, and to understand more fully the need for the modification factors given. From these points of view it should be extremely useful.

PARKYN, B., LAMB, F. and CLIFTON, B. V.

520

Polyesters; vol. 2, unsaturated polyesters and polyester plasticisers. Pub. for the Plastics Institute, London, Iliffe; NY, American Elsevier, 1967. 8, 168p, plates, tables, diagrs, refs, index. 47s 6d. [Vol. 1 revd December 1965 no. 639.]

B Volume 1 discussed saturated linear polyesters and about one-third of this volume is taken up with the linear polyesters of rather lower molecular weight which are used as 'polymeric plasticizers'. The rest of the book is concerned with the chemistry and technology of unsaturated polyesters used in glass-fibre laminates. This is a useful introduction to plastics technology for both students and practitioners.

TYSON, W.

521

Rope: a history of the hard fibre cordage industry in the United Kingdom. Wheatland Journals, for the Hard Fibre Cordage Institute, [1967]. xiii, 160p, plates, index. 50s.

A-D For the inquiring mind, this book makes light reading of one of the oldest trades known to man. The author has concentrated on the British history of ropes and, in the first part of

the book, describes the methods of production from raw material to the finished product of hard fibre ropes. He then discusses their possible replacement by synthetic fibres. The second part of the book is a who's who of those generations that have built up and maintained the industry.

681 *Precision Mechanisms*

ALT, F. L. and RUBINOFF, M. eds

522

Advances in computers, vol. 8. NY, London, Academic P, 1967. xii,345p, tables, diagrs, refs, indexes. 116s. [Vol. 7 revd May 1967 no. 257.]

B-C In this book the following topics are surveyed: 'Time-shared systems' by T. N. Pyke; 'Programming systems for algebraic formula manipulation' by Jean Sammet; 'American and international organizations concerned with standardization' by T. B. Steel; and 'Syntactic analysis of natural language, with special emphasis on a particular method' by Naomi Sager. There is also an exposition of a unified theory of the ways in which programming languages may be described by R. Narasimhan, and L. A. Lombardi makes a proposal for a system which will process incompletely specified problems.

HAYS, D. G.

523

Introduction to computational linguistics. Macdonald, 1967. xvi,231p, tables, diagrs, refs, index. 70s.

B Written specifically as an introductory university text for courses in computer applications to linguistics, this book has a wider interest. An introductory chapter establishes basic notions of computers and algorithms, and is followed by a chapter on the basic storage techniques for linguistic material—lists and trees. The basic techniques of string handling and dictionary looking are treated in some detail, and methods of parsing are discussed. Programming examples are given in ALGOL. There are more general treatments of linguistic research, automatic publication systems, concordances, automatic abstracting and indexing, and automatic translation. Exercises are provided where appropriate, and to each chapter is appended an annotated list of references.

69 *Building Industry*

WHYTE, W. S. and POWELL-SMITH, V.

524

Building Regulations explained and illustrated for residential buildings: a guide for students and others. Crosby Lockwood, 1967. x,262p, tables, diagrs, appendixes, index, bibliog. 35s. Paperback.

B Specially designed for the needs of students and those attending courses with no prior knowledge of the subject, this concise and fully illustrated guide to Purpose Groups I and III of the *Building Regulations 1965* should also be useful to architects, surveyors and builders.

7 THE ARTS

72 *Architecture*

MERRITT, F. S. ed.

525

Mechanical and electrical design of buildings for architects and engineers. London, NY, [etc], McGraw-Hill, ©1966. xi,[122p] Various paging, plates, tables, diagrs, index. \$4.95; 40s 6d.

B Four of the twenty-nine sections of *Building construction handbook* reprinted as a separate volume. They comprise heating and air conditioning, plumbing and sprinkler systems, electric power and lighting, and vertical transportation. Although reflecting American practice, this may be useful as a general information source on fundamentals.

SALVADORI, M. and LEVY, M.

526

Structural design in architecture. Example and problem solutions by J. J. Farrell. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xv,457p, tables, diagrs, index. 100s.

B This book is an advanced sequel to *Structure in architecture* to which it is cross-referenced. With a minimum of complex formulae, details are given of the design of frames, arches, grids, plates, membranes, shells, tensile structures, space frames and their basic components.

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Aslib Book List

A MONTHLY LIST OF RECOMMENDED
SCIENTIFIC AND TECHNICAL BOOKS
with annotations

VOLUME 32 NUMBER 11

November 1967

Entries 527-578

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ASLIB BOOK LIST VOL. 32 NO. 11 NOVEMBER 1967

Preface

Aslib Book List is a monthly classified list of books on scientific and technical subjects. Its special value is that every book included has first been examined and recommended by a specialist in the subject treated. A short annotation is given to indicate the scope of the book and the reason for its recommendation where this appears to be helpful.

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- a* when called upon for material in fields that are not familiar to them;
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- C* books of an advanced or highly technical character
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Regular transactions of societies are not included, nor are British Standard Specifications (except bound volumes).

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Aslib Book List

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3 SOCIAL SCIENCES

31 Statistics

HARRIS, B. *ed.*

527

Spectral analysis of time series: proceedings of an advanced seminar conducted by the Mathematics Research Center, United States Army and The Statistics Department at the University of Wisconsin, Madison, October 3-5 1966. NY, London, Sydney, Wiley, ©1967. x, 319p, tables, diagrs, refs, index. 64s.

C This seminar is in the best scientific tradition and presents a review of the recent advances in a most important method of analysing stationary time series. The ten papers, prefaced by a general introduction prepared by the editor, end with an item of special interest devoted to alternative parametric methods of analysis based on a consideration of stochastic models. The editor and publishers are to be congratulated on the speedy availability of work which is of such prime importance to both theoretical development and practical application.

SVERDRUP, E.

528

Laws and chance variations: basic concepts of statistical inference; vol. I, elementary introduction; vol. II, more advanced treatment. Amsterdam, North-Holland, 1967. xvii, 397p; xi, 313p, tables, diagrs, appendixes, indexes. 180s.

B This is a good translation from the Norwegian edition (1964) with additional material in five chapters and exercises. The emphasis of this work is on justification of methods in order to assist in their widest application. The mathematical background is principally that of the calculus, but some matrix algebra is encountered in Volume II: both volumes are self-contained. The author's presentation is attractive compared with currently available books of a similar standard and it may well suit many students who are looking for a book which is sound and readable.

5 MATHEMATICS AND NATURAL SCIENCES

51 Mathematics

CARTAN, E.

529

Theory of spinors. Foreword by R. Streater. Cambridge (Mass.), MITP, ©1966. 157p, index, bibliog. 64s.

C Spinors, discovered by Elie Cartan in 1913, are ordered pairs of complex numbers with simple transformations for rotation and reflexion, forming a basic structure for tensor calculus. Cartan's book, first published in 1938, emphasizes the geometrical aspect of orthogonal groups and is easier reading than more recent abstract treatments. It includes applications to relativity, Dirac's equation and the Lorentz group.

GREEVER, J.

530

Theory and examples of point-set topology. Belmont (Calif.), Brooks/Cole [distrib. by Prentice-Hall], ©1967. x, 130p, tables, diagrs, index, bibliog. 52s. *Contemporary undergraduate mathematics series.*

B A valuable source of examples of spaces with special properties. The author leaves some proofs, even of important theorems, as exercises.

MARKUSHEVICH, A. I.

531

Theory of functions of a complex variable, vol. III. Rev. English ed. tr. and edited by R. A. Silverman. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xi, 360p, tables, diagrs, index, bibliog. 104s. *Selected Russian publications in the mathematical sciences.* [Vol. I revd September 1965 no. 455.]

B The third volume of this excellent text includes elliptic functions, analytic continuation and conformal mapping. Riemann surfaces and the boundary problem for the Riemann mapping theorem are more fully treated than in other texts in English.

52 Astronomy. Surveying. Geodesy

WICKRAMASINGHE, N. C.

532

Interstellar grains. London, C & H; NY, Barnes & Noble, 1967. ix, 154p, plates, tables, diags, refs, appendixes, indexes. 65s. *International astrophysics series*.

C This is the first book to be published on interstellar grains, which form the obscuring matter that dims and polarizes star-light. In recent years rocket techniques have provided much relevant observational information. The author discusses critically the various theories (grain models) and gives an expert account of the whole subject with many references to the technical literature.

53 Physics

CHORLTON, F.

533

Textbook of fluid dynamics. London, Toronto, [etc], Van Nostrand, ©1967. xiv, 399p, tables, diags, appendix, index. 70s cloth; 35s paperback.

B A valuable text in fluid dynamics for university students of mathematics and science, and also relevant to certain branches of engineering as an advanced text. It is intended as a companion to the author's *Textbook of dynamics* (revd January 1964 no. 11), and the form of presentation is similar. This text covers a wide range of physical problems of two- and three-dimensional flows, and makes use of vector analysis throughout. Problems of gas dynamics, viscous flow and magnetohydrodynamics are dealt with fully. There are many figures and examples.

GORTER, C. J. *ed.*

534

Progress in low temperature physics, vol. V. Amsterdam, North-Holland, 1967. xi, 332p, tables, diags, refs, indexes. 100s. [Vol. IV revd November 1964 no. 597.]

B-C This volume contains articles on the Josephson effect and the study of the superconducting mixed state by neutron diffraction; flow phenomena and the rotation of superfluid helium; the radiofrequency size effect and magnetic breakdown in metals and the thermodynamic properties of fluid mixtures.

INSTITUTE OF PHYSICS *and* PHYSICAL SOCIETY

535

Physical basis of yield and fracture: conference proceedings, Oxford, 1966. Institute of Physics and Physical Society, [1967]. vii, 303p, plates, tables, diags, refs, index. 90s. *Conference series no. 1*. Paperback.

C This book covers the latest research in the field and contains nearly forty papers from various countries. It is conveniently divided into sections on theories, behaviour of metals, behaviour of polymers and behaviour of miscellaneous materials. The work will be useful to those interested in yield and fracture.

van KAMPEN, N. G. *and* FELDERHOF, B. U.

536

Theoretical methods in plasma physics. Amsterdam, North-Holland, 1967. ix, 215p, tables, diags, refs, indexes. 60s.

B An introduction to plasma physics intended mainly for theoretical physicists and students of theoretical physics, although many experimental plasma physicists may find it useful. The full range of plasma phenomena is covered from the magnetohydrodynamic approximation for high density, low temperature plasmas to the so-called 'collisionless', low density, high temperature plasmas.

KYRALA, A.

537

Theoretical physics: applications of vectors, matrices, tensors and quaternions. Philadelphia, London, Saunders, 1967. xiii, 359p, tables, diags, index, bibliog. 3 gns. *Studies in physics and chemistry*.

B A clear, if rather condensed, account for practising scientists of the methods, notations and formal structure of the mathematical tools they are likely to encounter. Vector algebra, spaces, transformations, integration and differentiation are treated in detail followed by tensor analysis, Fourier methods and Green's functions. The large number of applications of these techniques and examples for working will be very useful to physicists.

MATTUCK, R. D.

538

Guide to Feynman diagrams in the many-body problem. London, NY, [etc],

McGraw-Hill, ©1967. xii,294p, tables, diagrs, refs, appendixes, index. 4 gns. *European physics series*.

B-C This book is essential to all interested in theoretical physics. It will serve as an introduction to the physics of many-body theory via the diagram method. The author presents in a concise and coherent fashion the methods and techniques currently in vogue in several branches of physics. The absence of rigorous pedantic overtones has resulted in a delightful, refreshing and rewarding text. Each chapter ends with several exercises with solutions and references to more advanced literature.

SHKAROFKY, I. P., JOHNSTON, T. W. and BACHYNSKI, M. P. 539

Particle kinetics of plasmas. Reading (Mass.), London, Addison-Wesley, ©1966. x,518p, tables, diagrs, refs, indexes. 113s.

B-C This book gives a comprehensive account of the kinetic theory of plasmas, from particle interactions to the various plasma equations such as Boltzman, Fokker-Planck, Vlasov and the MHD and CGL equations. The plasma properties discussed cover a large part of plasma physics and are those which arise from kinetic theory, such as transport, radiation, relaxation, etc. The treatment is mathematical, but the mathematics is well explained, the sources of the data are well documented, and the results are compared with experiment at each stage. There are many well-chosen references.

537 Electricity

BRANSON, L. K. 540

Introduction to electronics. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xix,594p, tables, diagrs, refs, appendixes, index. 90s. *Prentice-Hall series in electronic technology*.

B This book is written by a member of the staff of the University of California, and is a competent survey of the field. It explains not only how electronic devices work, but why they work, in a clear and concise style in the form of a semi-tutorial text. Each chapter is paginated separately and contains a summary of the main points expounded, references and problems (to which answers are given to half at the end of the book).

FRANKL, D. R. 541

Electrical properties of semiconductor surfaces. London, NY, [etc], Pergamon P, 1967. xv,310p, plates, tables, diagrs, refs, appendix, index. 4 gns. *International series of monographs on semiconductors*.

B-C A well presented introduction to the concepts and experimental investigations of electron states generated by ideal and real surfaces. Both equilibrium and non-equilibrium conditions are discussed. The topics covered include space charge layers, surface recombination, lifetime, mobility and field effects. A useful detailed survey of surface preparation techniques, and the nature of the real surfaces so produced, concludes this account of a subject of considerable current interest. There are many references.

THORNTON, P. R. 542

Physics of electroluminescent devices. London, Spon; NY, Barnes & Noble, 1967. xvi,382p, plates, tables, diagrs, refs, indexes. 80s.

C The preparation of a series of postgraduate lectures delivered at the School of Engineering Science, Bangor, revealed the lack of an integrated text giving an up to date discussion in which new developments are treated in depth in relation to the more orthodox classical electroluminescent materials. This book remedies this with the exception of materials preparation which was omitted because there was not enough space to give a full and balanced treatment. The emphasis throughout is on the mechanisms themselves and the possible failures to which they are subject.

539.1 Nuclear Physics

HINDMARSH, W. R. 543

Atomic spectra. London, NY, [etc], Pergamon P, 1967. x,368p, tables, diagrs, refs, index. 45s. hard; 35s paper. *Commonwealth and international library of science, technology, engineering and liberal studies*.

B Presents in easily accessible form seventeen of the most memorable papers on atomic spectra ranging from J. J. Balmer (1885) to H. A. Bethe (1947). Papers have been translated into English where necessary. The one-hundred page introduction interprets these papers from a present-day point of view.

- MICHALOWICZ, A. 544
Kinematics of nuclear reactions. Tr. by Scripta Technica, ed. by R. A. Giles. Iliffe, 1967. 6,140p, tables, diagrs, index. 30s.

B-C A concise English version of a book originally published in 1964 by Dunod entitled *Cinématique des réactions nucléaires*. The first part deals with the mechanics of collisions between bodies, and the second part comprises a set of numerical tables which allow a very wide range of calculations to be made.

- PAUNCZ, R. 545
Alternant molecular orbital method. Philadelphia, London, Saunders, 1967. xiii,246p, tables, diagrs, refs, appendixes, index. 49s. *Studies in physics and chemistry*.

C A detailed account for specialists interested in recent methods of treating electron spin correlation in molecular orbitals by constructing spatially separate orbitals for different spins. Energy calculations for simple conjugated systems (butadiene, naphthalene) are presented and an outline is given of the extension of the method to solid state problems. The relation of this method to other approaches is clearly presented.

54 Chemistry

- HANNAY, N. B. 546
Solid-state chemistry. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xi,225p, plates, diagrs, appendix, index. 64s cloth; 40s paper. *Fundamental topics in physical chemistry*.

B An elementary, almost self-contained account of the chemistry of solids written from a modern standpoint, with electrical properties, imperfection equilibria and the control of these features very much in mind. This book could accompany a course given to second year chemists provided they have an elementary knowledge of statistical thermodynamics. There is a useful bibliography.

- KATRITZKY, A. R. and LAGOWSKI, J. M. 547
Principles of heterocyclic chemistry. Methuen, 1967. xvi,183p, tables, diagrs, index. 45s.

B This is an abbreviated version of an earlier textbook by the same authors. In its present form the book can be recommended to degree students in chemistry and to those teaching the subject. The presentation is somewhat condensed, but it is systematic and concentrates mainly on the methods for the synthesis of five- and six-membered heterocyclic structures containing one or two heteroatoms. Little attention is given to physical properties, and alkaloids are not included.

- MCTAGGART, F. K. 548
Plasma chemistry in electrical discharges. Ed. by P. L. Robinson. Amsterdam, London, NY, Elsevier, 1967. xi,246p, plates, tables, diagrs, refs, index. 115s. *Topics in inorganic and general chemistry, monograph 9*.

C Recent work has revealed many new chemical reactions in plasmas, and in this monograph on an essentially new field of chemistry attention is primarily directed to low pressure plasmas produced by electrical discharge and to the chemistry of the reactions rather than to the physics of the plasma. Experimental aspects receive due attention in this excellent account.

- MERTEN, U. ed. 549
Desalination by reverse osmosis. Cambridge (Mass.), London, MITP, [1967]. x,289p, plates, tables, diagrs, refs, index. \$10.00.

C This is the first book devoted solely to reversed osmotic desalination, also commonly called hyperfiltration. It is written by a team of American experts and is edited by one of the foremost contributors to the development of the process. Topics dealt with include basic theory, preparation and action of membranes, chemical engineering design and economics.

- PAULING, L. 550
Chemical bond: a brief introduction to modern structural chemistry. NY, Cornell UP; London, OUP, 1967. xi,267p, tables, diagrs, appendixes, index. 50s.

B Few can be unacquainted with the modern classic, Pauling's *Nature of the chemical bond*, 1939, or with its influence on chemical thought. This is an abridgement, expertly prepared by Linus Pauling himself, for the special benefit of undergraduate students, and embellished with examples and exercises.

- ★ RICE, O. K. 551
Statistical mechanics, thermodynamics and kinetics. San Francisco, London, Freeman, ©1967. vii, 586p, tables, diags, refs, index. 90s. *Series of books in chemistry*.

B An original approach to the subject deriving statistical mechanics from thermodynamics, as well as demonstrating their close relationship in a more orthodox way by showing the laws of thermodynamics obtained from statistical mechanics. Much of the thermodynamics is expressed in the language of statistical dynamics and a more generous treatment than usual is given to reaction kinetics. Although this book is written for the chemistry student, it is equally suitable for the physics student.

- ROBERTS, J. D. and CASERIO, M. C. 552
Modern organic chemistry. NY, Amsterdam, Benjamin, 1967. xxi, 844p, tables, diags, index. \$10.75.

✧ *B* A shortened version of the same authors' *Basic principles of organic chemistry*, published in 1964. The presentation of principles is virtually unchanged, but much of the factual detail and tables have been omitted. The numerous and well chosen problems which were an attractive feature of the larger work have been retained. The book is now essentially introductory and is suitable for the first-year of a degree course in chemistry.

★ 55 **Geology. Meteorology**

- RAMBERG, H. 553
Gravity, deformation and the earth's crust: as studied by centrifuged models. London, NY, Academic P, 1967. ix, 214p, plates, tables, diags, appendix, indexes, bibliog. 57s 6d.

B-C This book by a distinguished Scandinavian geologist will be of considerable interest to all students of structural geology and geotectonics. Theoretical discussion of the role of gravity in crustal deformation is complemented by the results of numerous well planned scale model experiments using a centrifugal force field to simulate the gravity field of the earth.

57 **Anthropological and Biological Sciences**

- JONES, A. W. 554
Introduction to parasitology. Ill. by A. D. Jones. Reading (Mass), London, [etc], Addison-Wesley, ©1967. xiii, 458p, illus, index, bibliog. 59s. *Addison-Wesley series in life science*.

✧ *B* Aspects of parasites as agents of disease are selected and compiled to form an elementary course intended for biology students. The book deals briefly with examples from the *Protozoa*, *Platyhelminthes*, *Acanthocephala*, *Nematoda* and *Arthropoda*, with short concluding sections on host responses, pathology and epidemiology and evolution of parasites. The illustrations are clear but not very detailed. A short list of suggestions for further reading is given at the end of each chapter, but there is no comprehensive bibliography.

577.1 **Biochemistry**

- BUTT, W. R. 555
Hormone chemistry. London, Toronto, [etc], Van Nostrand, ©1967. xvi, 397p, tables, diags, refs, appendixes, index. 75s.

✧ *C* A reference and textbook covering chemical, biological and immunological aspects of the main mammalian hormones. Only the hormones of the neurohypophysis, pituitary, adrenals, gonads, thyroid and pancreas are dealt with: the lesser ones such as gastrin and all insect and plant hormones are omitted. The relationship of structure to biological activity is emphasized, but the book is weak on the clinical side. There are excellent references from world literature up to 1966.

- ✧ PINCUS, G. ed. 556
Recent progress in hormone research, vol. 23. Proceedings of the 1966 Laurentian Hormone Conference. NY, London, Academic P, 1967. ix, 691p,

plates, tables, diagrs, refs, indexes. 224s. [Vol. 22 revd April 1967 no. 179.]

C Selected advances are presented in the fields of thyroid physiology, steroid hormones, peptide hormones, insulin and pancreatic function. All the papers maintain the characteristically high standard of this work, but the items on solid phase synthesis of peptides and the review of adrenal steroid biogenesis are particularly noteworthy.

58 Botany

de WIT, H. C. D.

557

Plants of the world; the higher plants II. Thames & Hudson, ©1967. 340p, illus, plates, index. 4 gns. [Vol. I revd May 1967 no. 234.]

A This second volume, like the first, is a splendid artistic production in which all the plates, particularly those in colour, are magnificent examples of photographic art and skill in reproduction. It will have a wide appeal to those who treasure beautiful books and the text, popularly written, provides a wealth of information on the remaining families of flowering plants.

6 APPLIED SCIENCES

615 Pharmacy

TRAINOR, D. C.

558

Handbook of industrial toxicology. Angus & Robertson, ©1966. xi, 153p, plates, refs, index. 45s.

B-C After a brief review of some pertinent aspects of industrial safety, the general toxicological and medical aspects of materials likely to be encountered in industry are described in a useful and readily understandable manner. This book will be of value to those who have or are preparing to assume responsibility in industry.

621.3 Electrical Engineering

COATE, G. T. and SWAIN, L. R. Jr.

559

High-power semiconductor-magnetic pulse generators. Cambridge (Mass), MITP, ©1966. xii, 136p, plates, tables, diagrs, refs, appendixes, index. \$7.50. MIT research monograph no. 39.

C This book gives a detailed theoretical and practical account of a MIT design study which was directed towards a solid state replacement for hydrogen thyratron pulse modulators. It concludes with a description of a prototype design giving 1.7 μ S, 1 mw, 10 kv pulses at 1200 p.p.s. The book is well written and illustrated.

CRAWFORD, R. H.

560

MOSFET in circuit design: metal-oxide-semiconductor field-effect transistors for discrete and integrated-circuit technology. London, NY, [etc], McGraw-Hill, ©1967. xiii, 136p, plates, tables, diagrs, refs, appendix, index, bibliog. \$10.00; 81s. Texas instruments electronics series.

B This book is primarily for the practising circuit designer. The theory of operation of the MOSFET and its characteristics are fully dealt with, and should enable the circuit designer to incorporate the MOSFET into his designs. The book also deals with the basic concepts of MOSFET integrated circuits and the use of MOSFETS in analogue circuits. Each chapter has an excellent bibliography and list of references.

JASINSKI, R.

561

High-energy batteries, NY, Plenum P, 1967. xv, 313p, tables, diagrs, refs, index. \$17.50.

C The rapid increase in demand for stored electrical packages to meet space, military and industrial requirements has outstripped much of the conventional battery manufacturing potential. High energy batteries and fuel cells are at a premium, and interest is reflected in the increased literature. This book is a long overdue summary of recent research into the general principles underlying the charging and discharging of porous battery plates. Capabilities, advantages and limitations of components are discussed. A competent summary of the state of the art for high-energy systems. There is a bibliography of 377 items and 427 recent US patent specifications, and an excellent index.

JOLLY, W. P.

562

Low noise electronics. EUP, 1967. 149p, diagrs, appendixes, index, bibliog. 25s. Introductory science texts.

A-B This book is one of a series aiming to introduce the non-specialist reader to more recent developments in science, and it successfully covers a range of fundamental concepts essential to an understanding of low noise and quantum electronics. A valuable introduction for undergraduates and others.

MARCUS, M. P. 563
Switching circuits for engineers. 2nd ed. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xiv, 338p, tables, diagrs, index. 96s. *Prentice-Hall electrical engineering series*.

C This is the second edition of what has become a standard work since first published in 1952. The many corrections and additions are improvements suggested by colleagues, some of whom are at IBM, or reflect advances which have taken place in the interim. New features include more problems at the end of each chapter (with answers to three-quarters of them), a bibliography and extensions of the tabular method to multi-output networks. Almost half the book is now devoted to sequential circuits.

MYAMLIN, V. A. and PLESKOV, Y. V. 564
Electrochemistry of semiconductors. Tr. from Russian. Foreword by C. G. B. Garrett. NY, Plenum P, 1967. xxii, 430p, tables, diagrs, refs, appendix, index. \$19.50.

C A comprehensive survey of the fields of both theoretical and experimental semiconductor electrochemistry. Although the Russian edition appeared as recently as 1965 the book has been revised in the light of subsequent advances. The problems of space-charge layer structure, the role of semiconductor current carriers in electrode reactions, frequency-dependence of the impedance of the electrolyte interface, corrosion of semiconductors, and the application of surface phenomena receive special attention. Each problem is first assessed qualitatively before discussion of the quantitative calculations and experimental results.

NEIDHARDT, P. 565
Technical dictionary of electronics. London, Pergamon P; Berlin, VEB Verlag, [1967]. 1660p. 250s.

D This dictionary includes electronics terms in English, German, French and Russian and was originally compiled in Germany. The volume is divided into language sections: word-for-word translation in the other three languages of each word is repeated as well as a cross reference to the number of the English entry, where other synonyms may be found.

NUSSBAUM, A. 566
Electronic and magnetic behavior of materials. Englewood Cliffs (NJ), Prentice-Hall, ©1967. x, 155p, tables, diagrs, appendixes, index. 48s cloth; 24s paper. *Prentice-Hall series in materials science*.

B The theory of semiconductors, dielectrics, magnetic materials, masers and lasers is introduced for undergraduates who have some knowledge of the background material.

623 *Military and Naval Engineering*

KORENEV, G. V. 567
Mechanics of guided bodies. Tr. by Scripta Technica, ed. by S. C. Dunn. Iliffe, 1967. 13, 551p, tables, diagrs, index. 95s.

C A highly specialized but most intelligible text which provides a theory for the science of the mechanics of guided bodies, such as already exist in older branches of mechanics. It explains how unstable mechanical bases for systems used to guide motion can be eliminated in the initial planning stages by means of mechanical models of the guidance systems as a whole. The three main sections cover fundamentals and methods, the motion of guided bodies in a vertical plane, and the general case of motion of guided bodies (three dimensional). An account is given of the mechanics of particles subjected to constraints, which should prove valuable to systems designers and astronautics engineers.

624 *Structural Engineering*

FENVES, S. J. 568
Computer methods in civil engineering. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xiv, 242p, tables, diagrs, refs, index. 72s. *Prentice-Hall international series in theoretical and applied mechanics*.

C This book will be appreciated by those experienced in the use of computers. The approach is algorithmic, but more common numerical processes are also treated. The examples from engineering applications are well chosen. FORTRAN II is used throughout but a survey is given of programming languages other than FORTRAN, such as STRESS.

WEAVER, W. Jr

569

Computer programs for structural analysis. Princeton (NJ), Toronto, London, Van Nostrand, ©1967. x,300p, tables, diagrs, refs, index. 38s. *Van Nostrand engineering paperback.*

B A clear and useful adjunct to *Analysis of framed structures* by Weaver and Gere. Stiffness method is used and flow charts are given with descriptive commentaries for programmes for the analysis of linear elastic structures. Matrix inversion and simultaneous solution of equations programmes are given. The book is limited to orthogonal co-ordinates. There are many detailed examples.

629.19 *Astronautics*

EHLING, E. H.

570

Range instrumentation. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xix,634p, plates, tables, diagrs, refs, appendixes, index. 134s. *Prentice-Hall international series in space technology.*

C This book is designed as a basic reference source for space personnel who are interested in optics, radar or photogrammetry. It attempts to define in detail the users' requirements and test procedures in satellite tracking and surveillance, range instrumentation planning and airborne radar testing and evaluation—expertise gained mainly on American missile projects. The four chapters on data acquisition and telemetry are particularly detailed and the material contained in the appendixes is basic to a wide variety of measurement problems. The analytical treatment makes this a complement to *Radio telemetry* by Nichols and Ranch, and *Radar system analysis* by Barton.

63 *Agriculture. Forestry. Livestock. Fisheries*

GRAFF, O. and SATCHELL, J. E.

571

Progress in soil biology: proceedings of the Colloquium on Dynamics of Soil Communities, Braunschweig, 5–10 September 1966. Amsterdam, North-Holland; Braunschweig, Vieweg, 1967. 656p, plates, tables, diagrs, refs, indexes. 150s.

B–C The separation of the papers into five sections seems to serve little purpose. The papers are essentially accounts of recent and current investigations in a very wide range of problems in soil biology in a number of geographical regions. As is to be expected in a collection of papers by many authors the standard is uneven, but readers should find this book absorbing and stimulating. The research worker in this discipline will find much of value for immediate consumption and future reference.

MASON, I. L.

572

Sheep breeds of the Mediterranean. Food and Agriculture Organization of the United Nations by Commonwealth Agricultural Bureaux, ©1967. xix,215p, plates, diagrs, index, bibliog. 65s.

D This is an outstanding contribution to zootechnical literature, which must become a standard reference. It elaborates, for the region, the author's classic *Dictionary of breeds, types and varieties of livestock*. Material from 310 references is meticulously and succinctly presented, by productive category and country, in superlative format and typography, supported by eleven distribution maps and 157 plates.

65 *Business Techniques. Management*

MAKOWER, M. S. and WILLIAMSON, E.

573

Teach yourself operational research: problems, techniques and exercises. EUP, 1967. vii,264p, tables, diagrs, indexes, bibliog. 10s 6d. *Teach yourself books.*

A This is probably the best small book on this topic now available; no book is perfect, but this one has captured the motivation of operational research where many larger works concentrate on technical details. After a helpful preface and introduction there are five chapters on some techniques used in operational research and four chapters on typical problem areas. There are valuable exercises with solutions and references.

- MORRELL, A. J. H. *ed.* 574
 Mathematical and statistical techniques for industry: problems of stocks and storage, by P. G. Briggs, O. L. Davies, P. J. Harrison, J. H. Hepburn, D. W. G. P. Millar and W. Spendley. Pub. for Imperial Chemical Industries by O & B, 1967. viii, 61p, tables, diagrs. 25s. *ICI monograph no. 4*. [See February 1965 nos 105-107.]

B Many will say that the quality of this series rises with each one. The editing has removed difficulties inherent in having as many authors as there are chapters. The practical character of these monographs needs no further comment: this one, after dealing with general principles, treats of active stock and buffer stocks with the interaction between them. The final chapter presents three case studies to illustrate the simulation approach to problems of stocks and storage.

66 Chemical Technology

- HIMMELBLAU, D. M. 575
 Basic principles and calculations in chemical engineering. 2nd ed. Englewood Cliffs (NJ), Prentice-Hall, ©1967. ix, 483p, tables, diagrs, appendixes, index. 96s. *Prentice-Hall international series in the physical and chemical engineering sciences*.

B An introductory text, suitable for first-year students, covering material and energy balances, including the properties of real gases, processes involving phase changes, and the use of appropriate charts and diagrams (except triangular diagrams). There is a short discussion of unsteady state processes. The text is illustrated with a large number of worked examples, and has a useful collection of appendixes.

669 Metallurgy

- BILBY, B. A., GLOVER, S. G. and WAKEMAN, D. W. 576
 Modern theory in the design of alloys: lectures delivered at the Institution of Metallurgists Refresher Course, April 1966. Iliffe for the Institution of Metallurgists, 1967. 7, 107p, plates, tables, diagrs, refs, index. 32s 6d.

B This book comprises three papers which will be useful to the student of physical metallurgy. In the first, dislocation theory is reviewed and brought up to date by the presentation of precise diagrams of imperfect dislocations and the introduction of the concept of the positive fault vector. In the second paper, mechanical strength is related to structure and hardening mechanisms are discussed. The third paper illustrates the methods adopted in the design of alloys for practical use.

- CAIRNS, J. H. and GILBERT, P. T. 577
 Technology of heavy non-ferrous metals and alloys: copper, nickel, zinc, tin, lead. Newnes, 1967. viii, 319p, plates, tables, diagrs, refs, indexes. 70s. *Newnes international monographs on materials science and technology*.

C A valuable book with emphasis on the practical aspects of application for the user of the more generally used alloys of metals such as copper, nickel, zinc, tin and lead. The first part deals with primary production, fabrication and heat treatment. The second part deals with applications in architectural uses, water distribution, ventilation, electrical, marine, high temperature, petroleum and chemical engineering. The third part deals with physical, mechanical and corrosion properties.

- O'NEILL, H. 578
 Hardness measurement of metals and alloys. 2nd ed. London, C & H; NY, Barnes & Noble, 1967. xvi, 238p, plates, tables, diagrs, indexes, bibliog. 60s.

C This is a completely rewritten version of the 1934 edition, and is a thorough treatment of the subject aimed mainly at the metallurgical engineer. The technological basis of hardness measurement is outlined and testing methods critically reviewed and correlated. Special attention is given to the testing of very hard materials, hot hardness and non-destructive testing methods. There are chapters dealing with related aspects such as deformation of crystalline materials, heat treatment, alloying, dynamic tests and temperature effects.

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December 1967

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ASLIB BOOK LIST VOL. 32 NO. 12 DECEMBER 1967

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3 SOCIAL SCIENCES

31 Statistics

FREUND, J. E. and WILLIAMS, F. J.

579

Dictionary/outline of basic statistics. NY, London, [etc], McGraw-Hill, [1967]. vii, 195p, tables, diags, refs. 24s. Paperback.

B-D These authors have written several excellent textbooks, but this new book is different and is correctly described by its title. It is an outline review of formulae used in basic statistical methods together with a dictionary of one thousand terms. The authors claim it to be the most up-to-date statistical dictionary, but they would not claim it to be more complete than required to support their outline of basic methods. It should be useful to students and teachers for the broad variety of basic courses offered in many countries.

KAZMIER, L. J.

580

Statistical analysis for business and economics. NY, London, McGraw-Hill, ©1967. xiii, 402p, tables, diags, index, bibliog. 64s.

A-B This is a programmed text which covers a basic course in statistical methods at rather more than the elementary level. It contains sections on probability, Bayesian inference, decision theory and time series. The layout and typography are excellent and there is a useful glossary of formulae. Although this text uses the simple linear-programme form of presentation and no attempt is made to hide answers to questions, this is not a drawback because it is intended to supplement a classroom presentation rather than to replace it. The book should be useful to part-time students and their teachers.

MENDENHALL, W.

581

Introduction to probability and statistics. 2nd ed. Belmont (Calif.), Wadsworth [distrib. by Prentice-Hall], ©1967. xiii, 393p, tables, diags, refs, appendixes, index. 68s.

B This book provides background to basic courses for business students and those interested in the social and biological sciences. The author's approach is based on statistical inference, unity of method applications in different fields and probability based upon sample concepts. Each chapter has a summary and there is a review of useful statistical tests. Throughout the text there are examples with solutions, and at the end of each chapter there are exercises to which answers are given in an appendix.

33 Economics

BERGSTROM, A. R.

582

Construction and use of economic models. EUP, 1967. x, 131p, tables, refs, index. 40s. *Applied mathematics series*.

B The representation of economic systems, large and small, in the form of mathematical models capable of statistical evaluation and assessment is an activity of immense and growing importance: this is econometrics. There now exist highly competent but large books on the subject and a few smaller monographs of considerable sophistication on parts of the field. The author has managed to bridge this gap with a successful presentation which is of manageable length. The style is somewhat compressed but by no means austere in relation to the admittedly difficult subject matter.

5 MATHEMATICS AND NATURAL SCIENCES

51 Mathematics

BAUM, J. D. and DOBYNS, R. A.

583

Structure of the real number system: a programmed introduction. Englewood Cliffs (NJ), Prentice-Hall, ©1967. [288p], diags, index. 56s. *Prentice-Hall mathematics series*.

A-B Starting with a minimum knowledge of algebra and geometry, this introduction to the theory of the real number system covers basic set theory and the axiomatic theory of real numbers including discussions of inequalities, absolute values, co-ordinate systems and functions. As a programmed text it is suitable for a wide audience, from the general reader

to introductory university work, as progress is determined by the student's individual rate of learning. Unfortunately the layout necessitates much page turning which is a distraction.

DUBREIL, P. and DUBREIL-JACOTIN, M. L. 584

Lectures on modern algebra. Tr. by A. Geddes. Edinburgh, London, O&B, 1967. xii,364p, tables, diagrs, index. 5 gns. *University mathematical monographs*.

B These authors, both professors at Paris, have contributed significantly to modern algebra. This honours text covers much ground—semi-groups, groups, rings, vector spaces, skew fields, Galois theory. Compactness is achieved partly by a close-knit style, and partly by the exploitation of unifying concepts, such as Moore families and lattice structure. Although self-contained, the book demands a reader with some sophistication and a little preparation.

HARDY, F. L. 585

Precalculus mathematics. Columbus (Ohio), Merrill [distrib. by Prentice-Hall], ©1967. ix,275p, tables, diagrs, index. 60s. *Merrill mathematics series*.

B The author prepares the reader for a later, reasonably rigorous, study of calculus by looking at algebra and trigonometry with emphasis on axioms, relations and functionality. Geometrical background is adequately supplied. There is a brief introduction to co-ordinate geometry in the plane, and a short chapter on complex numbers as ordered pairs. While possibly not suitable as a school text in this country, the book may provide ideas for the teacher and fringe reading for the pupil.

LAWDEN, D. F. 586

Mathematical principles of quantum mechanics. London, Methuen; NY, Barnes & Noble, 1967. xiv,280p, diagrs, appendixes, index, bibliog. 50s.

B A more than usually rigorous course on the mathematical structure of quantum mechanics intended as an advanced undergraduate text for applied mathematicians. The representation of quantum states in complex vector space is explained, followed by chapters on spin and the Pauli principle; observables with continuous spectra; time dependence; angular momentum; perturbation and Dirac's relativistic treatment of particle states. The physics of the subject is well represented and advanced exercises are provided for each chapter.

SMITH, M. G. 587

Introduction to the theory of partial differential equations. London, Toronto, [etc], Van Nostrand, ©1967. x,214p, diagrs, refs, appendixes, index. 50s cloth; 25s paperback. *New university mathematics series*.

B-C A systematic study of the elements of the classical theory, suitable for an honours student interested in mathematical physics. After a proof of the fundamental existence theorem, the book deals with the first and second order linear equations, the Laplace, wave, heat and hydrodynamical equations. Hadamard's integrals are linked to generalized functions. A text useful in itself but also a sound introduction to advanced treatises on the modern theory.

SPIVAK, M. 588

Calculus. NY, Amsterdam, Benjamin, 1967. x,586p, diagrs, index, bibliog. \$12.90.

B Produced like an artbook with square format and attractive end papers, this presentation of calculus should inspire the student. The stated purpose is to present calculus as the evolution of one idea, and the first real encounter with mathematics. There are many well designed questions (and answers), and for ease of revision all definitions are boxed.

VEECH, W. A. 589

Second course in complex analysis. NY, Amsterdam, Benjamin, 1967. ix,246p, diagrs, index, bibliog. \$8.75.

B-C The author assumes a basic knowledge of complex variable theory and deals with topics of interest to an honours student specializing in this field: the general mapping theorem; Picard's theorems and the related results of Landau, Schottky, Koebe and Bloch, using modular functions and the concept of a covering surface; the Weierstrass and Hadamard theorems on integral functions; Ikehara's proof of the prime number theorem. The presentation is in memoir rather than textbook style.

53 Physics

BADGER, P. H.

590

Equilibrium thermodynamics. Boston (Mass.), Allyn & Bacon, ©1967. xiv, 626p, tables, diagrs, refs, appendixes, index. \$11.95. *Allyn & Bacon series in mechanical engineering and applied mechanics.*

B Although written with first-year engineering undergraduates in mind, more advanced students will also find this book useful. The basis of thermodynamics is dealt with very clearly and at length but, for example, thermodynamic functions are dealt with via Legendre transformations which the average first-year student may find rather abstract.

BALL, K. J. and OSBORNE, G. F.

591

Space vehicle dynamics. OUP, 1967. x, 259p, tables, diagrs, refs, appendixes, index. 75s.

B-C A clear and concise text covering a wide range of technical and fundamental topics involved in the design and performance of rockets, satellites and space probes. The reader is assumed to have a 'reasonable background in mathematics' and the text does not avoid complex derivations, but these are approached in a satisfying way from physical first principles. This book will be of value to general students of physics and engineering and to specialist designers. There are good bibliographies.

BARFORD, N. C.

592

Experimental measurements: precision, error and truth. Reading (Mass.), London, [etc], Addison-Wesley, ©1967. xi, 143p, tables, diagrs, appendixes, index, bibliog. 18s. Paperback.

B The author has attempted to avoid detailed theory by tying the presentation to experience. This practical approach, based on possible scientific experiments, should help the reader to understand the problems attached to the proper interpretation of results and the theory of errors.

BATCHELOR, G. K.

593

Introduction to fluid dynamics. CUP, 1967. xviii, 615p, plates, tables, diagrs, appendixes, index. 75s.

B-C This mathematical introduction keeps closely in touch with physical reality. It begins with general fluid properties and equations, with a thorough study of the flow of an incompressible viscous fluid, boundary layers and Reynolds numbers. The properties of an inviscid fluid in irrotational motion or with vorticity follow, so that the student can see how far these relatively simple mathematical problems approximate to observed flow patterns. The book requires a little knowledge of vector calculus and tensor notation, and is suitable for later undergraduate and first postgraduate years.

BENEDICT, R. P. and CARLUCCI, N. A.

594

Handbook of specific losses in flow systems. NY, Plenum P, 1966. ix, 193p, tables, diagrs, appendix. \$12.50.

D Most of this book is devoted to generalized compressible flow loss tables for both subsonic and supersonic flows. The basic theoretical relationships are presented in short introductory chapters together with numerical examples of their use. The tables enable pressure losses in Fanno-type flows to be obtained.

EBERT, H. *ed.*

595

Physics pocketbook. O & B, 1967. 575p, tables, diagrs, index. 3 gns.

B A particularly useful compendium of facts, formulae, derivations, sources and physical constants covering mathematics, units and dimensions, relativity, mechanics, acoustics, optics, heat and thermodynamics, electricity, magnetism and nuclear physics, statistics and errors of observations. The information covers the field of interest to science undergraduates and, although it generally lacks references to standard texts, would be most useful in the laboratory.

STEEL, W. H.

596

Interferometry. CUP, 1967. ix, 271p, tables, diagrs, index, bibliog. 60s. *Cambridge monographs on physics.*

C This book covers the fundamental theory of two-beam and multiple-beam interferometry, and describes practical instruments and their application in optical testing, in metrology and in interference spectroscopy. The text and the diagrams are clear and concise.

VIKTOROV, I. A.

597

Rayleigh and Lamb waves: physical theory and applications. Tr. from Russian. Foreword by W. P. Mason. NY, Plenum P, 1967. x, 154p, plates, tables, diagrs, refs, index. \$9.50. *Ultrasonic technology: a series of monographs.*

C A most welcome and useful text on the theory and properties of Rayleigh and Lamb waves and of their generation and detection using various transducer systems. The propagation on curved surfaces, at the intersection of plane surfaces, at an end section, and (a matter which is of tremendous practical importance) the propagation at a liquid-solid interface, is treated thoroughly. Practical applications discussed include the assessment of general physical properties, detection of surface defects, residual stresses and incipient fatigue cracks in solids, sheets, tubes and complex shaped articles, and the application of ultrasonic Rayleigh and Lamb waves to the design of delay lines.

WOLF, E. ed.

598

Progress in optics, vol. VI; contributions by E. N. Leith, J. Upatnieks, P. Beckmann, M. Françon, S. Mallick, K. Yamaji, D. R. Herriott, J. A. Armstrong, A. W. Smith, G. A. Vanasse, H. Sakai, F. Kottler. Amsterdam, North-Holland, 1967. xv, 388p, plates, tables, diagrs, refs, indexes. 108s. [Vol. V revd May 1966 no. 220.]

C This volume contains well documented reviews of recent developments in holography, scattering by rough surfaces, the measurement of degree of coherence, intensity fluctuations in lasers, laser interferometry, zoom lens design, Fourier spectroscopy and diffraction at a black screen. The very high standard one has come to expect in this series has been maintained.

537 *Electricity*

LOUCKS, T. L.

599

Augmented plane wave method: a guide to performing electronic structure calculations. NY, Amsterdam, Benjamin, 1967. xiv, 256p, tables, diagrs, refs, appendixes. \$7.50. *Frontiers in physics.*

B-C This authoritative and well-written book contains chapters on the theory and practice of augmented plane wave and relativistic augmented plane wave calculations. Although the theory of the method is fully presented, the emphasis is on producing results. Computer programs are presented in the appendixes for doing such calculations.

539.1 *Nuclear Physics*

PILKUHN, H.

600

Interactions of hadrons. Amsterdam, North-Holland, 1967. xi, 375p, tables, diagrs, refs, appendixes, index. 100s.

C This is a useful book particularly for experimenters. It deals mainly with strong interactions, although weak and electromagnetic are included. Only S-matrix methods are treated, and the emphasis is on 'dynamics' rather than symmetries. There is plenty of experimental contact, and the problem of spin and helicity formalism is dealt with fairly fully.

WILSON, J. G. and WOUTHUYSEN, S. A. eds

601

Progress in elementary particle and cosmic ray physics, vol. IX. Amsterdam, North-Holland, 1967. xi, 315p, plates, tables, diagrs, refs, indexes. 100s. [Vol. VIII revd December 1965 no. 607.]

C Devoted to cosmic ray research up to 1966, this volume contains chapters on the effect of the solar wind, Cerenkov radiation from showers and deep underground experiments on the energy spectrum and neutrinos. There is a section on the use of ionization calorimeters for energy measurements. Each chapter is an authoritative review of concepts and recent interpretation of experiments, of interest to experts in the field. There are useful references

54 Chemistry

AMERICAN CHEMICAL SOCIETY

602

Equilibrium concepts in natural water systems. A symposium sponsored by the Division of Water, Air, and Waste Chemistry at the 151st Meeting of the Society, Pittsburgh, March 1966. Washington (DC), the Society, 1967. viii, 344p, plates, tables, diagrs, refs, index. \$8.50. *Advances in chemistry series*.

C The sixteen papers collected in this volume form a common meeting ground for analytical, and physical chemists, oceanographers, geologists, geochemists and limnologists for the study of the complex, non-equilibrium, dynamic systems which constitute natural waters and of the effects which man-made effluents may have upon them.

BROWN, G. I.

603

New guide to modern valency theory. Foreword by L. E. Sutton. Rev. ed. Longmans, 1967. 238p, tables, diagrs, appendix, indexes. 1 gn. Paperback.

B A sound and useful introduction to the modern treatment of theoretical and inorganic chemistry, suitable for A and S level GCE and certain first-year degree and diploma courses. It could also be used with profit by honours degree students before tackling the more advanced texts.

KAUZMANN, W.

604

Thermal properties of matter; vol. II, thermodynamics and statistics, with applications to gases. NY, Amsterdam, Benjamin, 1967. xi, 327p, tables, diagrs, refs, appendixes, index. \$8.50 cloth; \$3.95 paperback. *Physical chemistry monograph series*. [Vol. I revd June 1966 no. 266.]

B This volume follows and, to a significant extent, depends on volume I on the kinetic theory of gases, and supplements general physical chemistry texts by a more extended and specialized treatment of the defined area of the subject, although at a level which remains within the grasp of the senior honours undergraduate. The necessary mathematics is reviewed and many examples are given.

MONCRIEFF, R. W.

605

Chemical senses. 3rd ed. Leonard Hill, 1967. vii, 760p, tables, diagrs, indexes. 8 gns.

B A thoroughly revised text of this standard reference book which is a comprehensive treatise on biological, chemical and social aspects of the senses, particularly those of smell and taste. There is an important review of the latest theory on measurement and chemical make-up of these senses.

ROBINSON, F. A. and AMIES, F. A.

606

Chemists and the law. Spon, 1967. xx, 231p, tables, indexes, bibliog. 40s.

A-B A useful book which shows chemists the many aspects of their work which bring them into contact with the law. Omissions are inevitable in a book of this type, but one feels that mention should have been made of the Misrepresentation Act 1967, and possibly also the subject of conflict of laws.

SNELL, F. D. and SNELL, C. T.

607

Colorimetric methods of analysis: including photometric methods, vol. IVA. 3rd ed. Toronto, London, [etc], Van Nostrand, ©1967. ix, 645p, tables, diagrs, indexes. 140s.

C This volume supplements the material presented in the first seven chapters of volume IV and contains additional methods. The methods concern the determination of nitrites, nitrates, nitro-compounds, aliphatic amines, amides, amino acids, proteins, aromatic amines and amides, azo compounds and nitrogen-containing cyclic compounds. The methods are primarily colorimetric or photometric, but details are given of attendant techniques such as chromatographic separations. This book will be of interest to analytical chemists and biochemists.

55 Geology. Meteorology

ZENKOVICH, V. P.

608

Processes of coastal development. Ed. by J. A. Steers assisted by C. A. M. King, tr. by D. G. Fry. Edinburgh, London, O & B, 1967. xv, 738p, plates, tables, diagrs, index, bibliog. 12 gns.

B Since 1944 Dr Zenkovich has been building up a strong team in the Institute of Oceanology in Moscow to make shallow-water and coastal studies. This is a translation of his textbook published in 1962, and the editors and translator have done a good job. It is a unique, comprehensive account of coastal forms and changes and of the processes which produce them, with splendid illustrations, mostly from the coast of the Soviet Union. It is readable, exciting and well produced.

ZVYAGIN, B. B.

609

Electron-diffraction analysis of clay mineral structures. Tr. from Russian by S. Lyse. Rev. ed. NY, Plenum P, 1967. xvi, 364p, plates, tables, diags, refs, index. \$19.50. *Monographs in geoscience*.

C The text mainly concerns theoretical considerations of structural analysis of layer-silicates using electron diffraction techniques. Brief mention is made of experimental methods and one chapter discusses specific structural analyses. The text has the usual heavy wordiness of translated Russian, but it contains useful information on Russian researches in this field.

57 Anthropological and Biological Sciences

BÜNNING, E.

610

Physiological clock. 2nd ed. London, Longmans; NY, Springer-Verlag, 1967. 167p, tables, diags, refs, indexes. 24s. *Heidelberg science library*. Paperback.

B An English reprint of *Die physiologische Uhr*, which has now become a classic. It introduces the non-specialist reader to a field of rapidly growing interest, the mechanism and the biological importance of a wide range of seemingly spontaneous rhythms of physiological variables, in species as diverse as unicellular organisms, insects and man.

CLEAVER, J. E.

611

Thymidine metabolism and cell kinetics. Amsterdam, North-Holland, 1967. 259p, plates, tables, diags, refs, appendix, index. 86s. *North-Holland research monographs, frontiers of biology vol. 6*.

C The properties of radioactively-labelled thymidine, its detection within the cell by autoradiography and its metabolism by the cell are described in detail. The cell cycle of individual cells and the kinetics of proliferation of populations of cells are discussed and the use of radioactively-labelled thymidine in these studies is carefully evaluated.

VILLEE, C. A.

612

Biology. 5th ed. London, Philadelphia, Saunders, 1967. xxiii, 730p, plates, tables, diags, appendix, index, bibliog. 58s.

A-B A very thorough textbook attempting to cover the whole of biology as one integrated discipline sufficiently deeply for understanding, without being superficial. Arranged in seven parts, it has thirty-seven chapters helpfully broken into sections. This presentative and the design make it easy for reference.

58 Botany

BARNEBY, T. P.

613

European alpine flowers in colour. Foreword by H. Gilbert-Carter. Nelson, 1967. 239p, plates, diags, indexes. 70s.

A Although lovers of alpine plants will wish to acquire this book, the text is somewhat elementary. The chief merit is in the plates which on the whole are very good, although some are not of high quality and give a poor indication of certain species.

KELMAN, A. ed.

614

Sourcebook of laboratory exercises in plant pathology. Prepared by the Sourcebook Committee of the American Phytopathological Society. San Francisco, London, Freeman, ©1967. xxvii, 387p, plates, tables, diags, refs, indexes, bibliog. 68s.

B This book is a major contribution to the teaching of plant pathology. The diversity of the subject has demanded a large number of contributors and inevitably this has led to difficulties of common expression and continuity. The classification of subject exercise appears to be sound and sensible and this greatly assists the selection of specific topics.

- MILNE, L. and MILNE, M. 615
 Living plants of the world. Nelson, 1967. 336p, plates, index. 4 gns.

A This is a superb work in content, typography and illustration. It is a popular account of the flowering plant kingdom in which is packed much useful information on the properties and uses of many species. The photographs are outstanding, but the composition and beauty of the coloured plates is at times breathtaking.

59 Zoology

- CASTWOOD, E. 616
 Radar ornithology. London, Methuen; NY, Barnes & Noble, 1967. xii, 277p, plates, tables, diags, refs, appendix, index. 75s.

B A useful introduction to basic principles and limitations of radar, suitable for those with GCE physics. Most of the book summarizes published work on the applications of radar to the study of bird migration and bird flight. In view of the damage caused by birds to aircraft, such studies will become increasingly important.

6 APPLIED SCIENCES

621.3 Electrical Engineering

- BROWN J. ed. 617

Electromagnetic wave theory: proceedings of a symposium held at Delft, The Netherlands, September 1965; parts 1 and 2. London, NY, [etc], Pergamon P, 1967. xvi, 541p; vii, [557p], plates, tables, diags, refs. 140s each. *International series of monographs in electromagnetic waves.*

C These two volumes record 129 papers presented by an international body of scientists of repute in the field. The papers are grouped under the headings of wave propagation; waveguides; over-moded and beam waveguides, surface waves; propagation in non-linear media; antennas; scattering and diffraction, statistical optics and coherence. The main emphasis of the papers is on the classical aspects of the subject, i.e. inhomogeneous media, antenna theory, boundary value problems and surface waves. There are many references and the two volumes constitute a most valuable survey.

- CHIRLIAN, P. M. 618
 Integrated and active network analysis and synthesis. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xx, 427p, diags, refs, appendix, index, bibliog. 100s. *Prentice-Hall electrical engineering series.*

C This book is concerned with the circuit theory needed for integrated and active network synthesis. It contains a brief review of the basic behaviour and fabrication of integrated circuits. Most of the work on passive networks is concerned with giving a good treatment of the analysis and synthesis of distributed networks.

- JO, B. C. 619
 Automatic control systems. 2nd ed. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xii, 523p, tables, diags, refs, index. 108s. *Prentice-Hall electrical engineering series.*

B-C This book is concisely but well written. It covers the general control system theory from an introductory to advanced level from an analytic view point. It includes standard frequency and transient response analysis, compensation, the root-locus method, sampled data systems, but not the analysis of non-linear systems. The more recent state variable method of analysis is introduced for continuous and sampled-data systems, and concepts such as observability and controllability, and some aspects of optimal control are outlined. There are many diagrams.

- EE, M. A., EASTER, B. and BELL, H. A. 620
 Tunnel diodes. London, C & H; NY, Barnes & Noble, 1967. xii, 196p, tables, diags, refs, index. 35s. *Modern electrical studies.*

C A useful textbook for advanced students which starts with a physical and mathematical theory of tunnelling and then describes the properties of tunnel diodes, methods of construction and related metallurgy. The theory of tunnel diodes as linear circuit elements is then outlined and their use in amplifiers, oscillators, detectors and mixers is discussed. Finally non-linear circuit applications of tunnel diodes are described, such as switching, and logic storage elements.

WALDRON, R. A.

62.

Theory of waveguides and cavities. Maclaren, 1967. xiii, 120p, diags, refs, index. 32s.

C This book consists of nine chapters, eight of which are reprints from previous publications. The one remaining is on 'Surface impedance as a boundary condition'. The author does not claim that this is a complete treatise, but that it covers particular aspects of the theory not generally understood and that it should supplement a standard textbook.

WHEELER, G. J.

622

Radar fundamentals. Englewood Cliffs (NJ), Prentice-Hall, ©1967. xiii, 105p, diags, index. 48s. *Prentice-Hall series in electronic technology.*

B A textbook which describes each major sub-division of a radar system. It is easy to follow and the mathematics is limited to simple algebraic equations. Subjects include aeriels, target characteristics, types of radars, pulsed doppler, c.w. radar, systems design and testing, and space applications. There are problems for self-tuition at the end of each chapter.

621.7 Workshop Practice

JACKSON, M. D.

62.

Welding; methods and metallurgy: a textbook of welding technology. Griffin 1967. viii, 422p, tables, diags, refs, index, bibliog. 64s.

B A very comprehensive, yet easily read textbook. Important aspects are highlighted and sufficient references given to make it useful to students and welding technologists. The metallurgy of welding is thoroughly covered and no other publication provides such concise yet informative account of the subject.

63 Agriculture. Forestry. Livestock. Fisheries

DENT, J. B. and CASEY, H.

624

Linear programming and animal nutrition. Crosby Lockwood, 1967. vii, 111p, tables, diags. 35s.

B This introduction to the use of linear programming in diet formulation provides a useful and interesting background to the subject. The examples are simple and are easily followed by the non-mathematical reader. Neither linear programming nor animal nutrition are treated in great depth and the bibliography is sparse.

TAYLOR, J. A. ed.

625

Weather and agriculture. London, NY, [etc], Pergamon P, 1967. xi, 225p, tables, diags, refs. 80s.

C This is a selection from eight symposia held in the Geography Department, University College of Wales, Aberystwyth, and includes papers by recognized geographers, meteorologists, agriculturalists and biologists on the influence of climate and weather factors on production, on the incidence or the prediction of incidence of diseases among grass crops, tillage crops and livestock, and on farm management decisions. A useful and varied compendium.

66 Chemical Technology

BENDER, A. E.

626

Dietetic foods. Leonard Hill, 1967. xii, 286p, plates, tables, diags, appendix, index. 3 gns.

B A useful book for the dietitian or nutritionalist giving up-to-date information on nutrition and diet therapy. The subjects are dealt with thoroughly, and the chapters on available dietetic food preparations will be of particular value to those approaching the practical problems of dietetics.

669 Metallurgy

VAN HORN, K. R. ed.

627

Aluminum; vol. I, properties, physical metallurgy and phase diagrams; vol. II, design and application; vol. III, fabrication and finishing. Ohio, American

Society for Metals [distrib. by C & H], ©1967. xiv,425p; xxii,682p; xxiii,813p, plates, tables, diagrs, refs, indexes. 96s; 128s; 144s.

C A comprehensive book commissioned by the Society for Metals to meet the needs of users of aluminium. Volume I is an expanded version of *Physical metallurgy of aluminum alloys* by Fink and others, first published in 1949. Extensive cross references throughout weld the work together, and correction at proof stage has enabled references to work in 1966 to be included. The ninety-six authors are employed by the Aluminum Company of America as engineers, scientists and metallurgists, but they reflect the views of the industry as a whole. The only work to approach this in detail is the two-volume *L'aluminium* of the Pechiney Group, published in 1964.

67/68 Manufactures

681 Precision Mechanisms

ORD-HUME, A. W. J. G.

628

Collecting musical boxes: and how to repair them. A & U, 1967. 140p, plates, diagrs, index, bibliog. 2 gns.

A-C The historical chapters and the forty-four plates will by themselves justify the purchase of this book by the general reader. The dealer and collector will find valuable information in the chapters dealing with the inspection and identification of instruments. The collector with some technical skill will find invaluable the excellent chapters on overhaul and repair which are written with the convincing authority given by extensive first-hand experience.

van SANTEN, G. W.

629

Electronic weighing and process control. Macmillan, 1967. xiii,271p, plates, tables, diagrs, index. 78s. *Philips technical library*.

B The advantages of electronic weighing as compared with conventional lever methods have led to increased use of the technique in industry and elsewhere. Its gradual evolution during the last two decades from the various measurement techniques by means of strain gauges is described. Theoretical principles, practical design of equipment and the far reaching applications to automated plant are described.

SCHERR, A. L.

630

Analysis of time-shared computer systems. Cambridge (Mass.), MITP, ©1967. xxvii,115p, tables, diagrs, index, bibliog. \$5.00. *MIT research monograph no. 36*.

B Two different types of models were employed in this useful analysis of some performance measures of time-shared computer systems. The first model simulated coarse profiles of both system and user behaviour based on project MAC's CTSS. By a comparison with actual measurements this model demonstrated that gross simulations can give extremely accurate results. Variations of the simulation model were used to compare a number of strategies for program swapping and scheduling. The second study used a continuous-time Markov model to derive some statistical measures of both single and multiple-processor time-shared systems.

7 THE ARTS

72 Architecture

PILKINGTON RESEARCH UNIT

631

Primary school: an environment for education. Ed. by P. Manning. University of Liverpool, 1967. 163p, plates, tables, diagrs, appendixes, index. 40s. Paperback.

B Already a standard work in an ill-documented field, this report is part of a research programme aimed at achieving an understanding of the total environment within buildings. The insight of architects into the aims of modern primary school teaching and their collaboration in the design of learning spaces has resulted in an extremely worthwhile book with ample illustrations, diagrams and examples. It is also very readable.

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